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November 1982/$2.00

WEEDS TREES & TURF

The Journal of Landscape and Golf Course Design, Construction and Care Since 1962

Golf and Turf Vehicles for 1983, A Tough Market

Compaction on Golf Fairways Is Really a Traffic Problem

Industrial Park Landscapes Are Bait for Tenants

INDUSTRIAL PARK PROFILE

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WT&T

Cover: Thirty acre industrial park west of St. Louis groomed for efficiency and comfort. See page 36.

NOVEMBER 1982/VOL. 21, NO. 11

Fairway compaction prevention, see page 22.

St. Louis Industrial Parks, see page 25.

General Electric's landscape, see page 30.

22
Drainage Compaction Are Primary Causes Of Fairway Compaction

Part 2 of golf course architect Ron Fream's study of compaction on the golf course. Fream focuses on design and prevention of compaction.

25
Landscape Management Profile: Industrial Parks and Campuses

Industrial parks are a growing solution to inner city offices. New research and two profiles illustrate the growth in industrial park landscape maintenance. Contract an in-house programs are explored.

42
Highly Competitive Golf Car Market Gets Tighter

The golf car market has always experienced manufacturers coming and going. This year Bajaj entered and Taylor Dunn is pulling out. Turf and industrial vehicles represent a more solid market. List of models for 1983 is presented.

46
The Ups and Downs of the Golf Car Business, a History

The golf car division of the National Golf Foundation developed this history of the golf car. First a vehicle for the handicapped, today the golf car is a major profit producer for courses.

DEPARTMENTS

Outlook 4
Vegetation Management 41
Green Industry News 8
Golf Update 10
Landscape Update 14
Government Update 20
Events 50
Products 52
Classifieds 54
Advertiser Information 56

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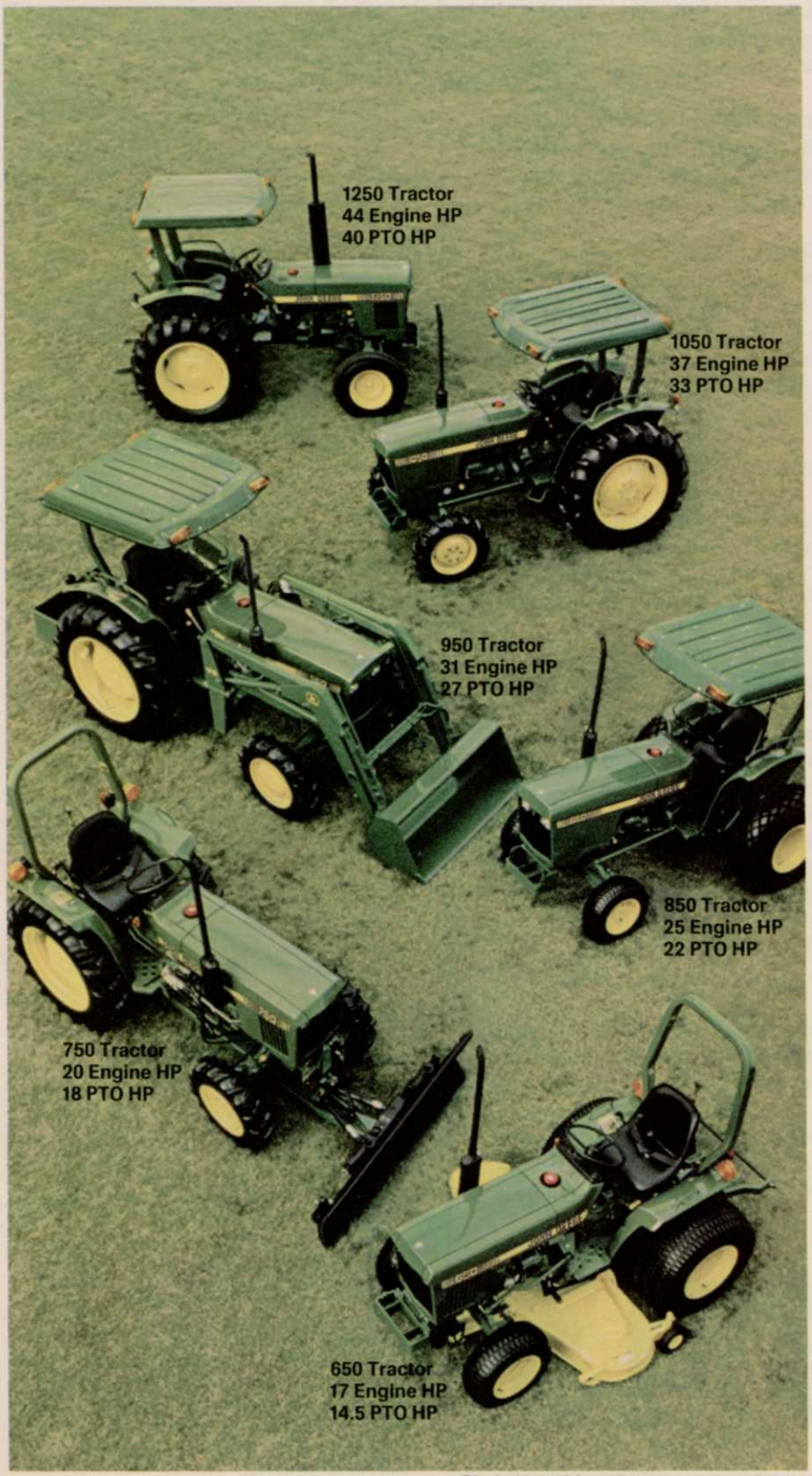

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Or choose the turbocharged 1050 for greater power and fuel economy in a compact package. And for really big jobs, the 1250 is an ideal choice. You can even equip these tractors (excluding the 850) with mechanical front-wheel drive to gain extra traction.

For the name of the nearest dealer, or a free folder on the John Deere compact utility diesel tractors, call 800-447-9126 toll-free (800-322-6796 in Illinois) or write John Deere, Dept. 67, Moline, Illinois 61265.

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WT&T

OUTLOOK

By Bruce F. Shank, Executive Editor

It's a Horse Race, We're Winning

Don't let stories about International Harvester and Allis Chalmers get you down. Manufacturers to the golf and landscape industries are strengthening their promotional campaigns because our market is a sound one.

Toro and Jacobsen are reporting improved sales. Mobay, Mallinckrodt, Dow, Rhone Poulenc, Stauffer and other chemical companies are realigning marketing strategies to beef up specialty chemicals. More than ten new chemicals are nearing registration for turf and ornamentals.

Two markets are of particular interest to manufacturers, golf and lawn care. The term lawn care is stretched often to include all landscape contractors. Golf is a solid performer for manufacturers and lawn care is the market of potential.

The fact that we have two strong identities within the landscape industry, has brought new respect to all segments of the market. Nursery, like golf, is highly regarded but not to the same degree as golf and lawn care.

To me, the landscape contractor is not getting the recognition he deserves from manufacturers. They understand lawn care, golf, sod, nursery, and tree care. For some reason the terms landscape contractor and grounds manager are too general or too hard to define in terms of buying. The market profiles we started in August are intended to help both the reader and the manufacturer in terms of identity.

Manufacturers have also voiced uncertainty over the involvement of distributors to the landscape industry. As a result, national and large regional distributors such as Lakeshore, The Andersons, Miller, and Lebanon are growing in market share.

Who cares if the landscape industry is attractive to manufacturers? Due to the highly complicated and expensive laws governing chemical registration today, manufacturers must set priorities and make choices. Equipment manufacturers carry tremendous overhead and they too have to make choices. If we want to assure our future supply of quality equipment and chemicals specifically for our market, we must gather the data and do whatever it takes to show manufacturers how significant we are.

Call for Guest Editorials

If you read *Newsweek*, you probably read the "My Turn" page where readers provide insight into the effects of laws and politics on their lives. *Weeds Trees & Turf* would like to provide its readers with the same opportunity.

If you would like to make a statement to the industry, please send a two-page, double-spaced manuscript to Bruce Shank, *Weeds Trees & Turf*, 7500 Old Oak Blvd., Middleburg Heights, OH 44130.

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OFFICES

ATLANTA
3091 Maple Drive
Maple Center One Building
Atlanta, GA 30305
(404) 233-1817

CLEVELAND
7500 Old Oak Boulevard
Cleveland, OH 44130
Editorial: (216) 243-8100

CHICAGO
11 East Wacker Drive
Chicago, IL 60601
(312) 938-2344

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We're not just in the golf car business.

We're in the golf course business.

Our president Joseph Noll looks at golf cars a little differently than other manufacturers do. He's been deeply involved in the *business* end of golf for over 25 years. He has been a country club president, and a volunteer in many club and course organizations. Currently a director and an officer of the National Country Club Association and a director of the Greater Milwaukee Country Club Association, Mr. Noll knows that a golf car is an important, specialized piece of equipment.

And he knows something else: a quality golf car is important to a quality golf course.

In 1982, when Columbia purchased the golf car division of Harley-Davidson, Mr. Noll had the opportunity as president to make this awareness the foundation of something important. Prior to this purchase, an extensive survey of all golf car products was made, and he came to the firm conclusion that Harley-Davidson built the best golf car in the world. And he knew he could make it even better.

Introducing the Columbia Car Corporation.

Columbia has a single purpose. With the special understanding we have of the role golf cars play in the golf course business, we've chosen to concentrate our efforts toward one end—producing golf cars of uncompromised quality. Every Columbia car coming off the line will deliver what the best club management is demanding today: economy, efficiency, reliability, longevity. It's true whether you choose our gasoline- or electric-powered car—three-wheeled or four-wheeled. That's not just a commitment for the future. It's a rock-solid reality today.

Ours are the only golf cars made in America with an American engine. Every Columbia is manufactured at our plant in Deerfield, Wisconsin, a place where the work ethic that established American manufacturing excellence still thrives.

And we've just expanded to an adjacent building giving us 154,000 square feet of total manufacturing space.

We stand behind what we sell.

We give you a two-year warranty on the major engine components of our gasoline cars* and a two-year warranty on the master drive system for our electric cars.** That's *twice as long* as any other company offers! We have the confidence because we have the products.

Our involvement doesn't stop at the end of the production line. In fact, Columbia has the largest dealer network of any golf car manufacturer. It's also recognized as the finest service organization in the industry. So you can count on fast, expert service wherever your course is located.

We do more than sell golf cars.

We strive for increased quality to improve performance and dependability. To reduce maintenance costs. To increase user satisfaction. To innovate in the areas of efficiency, comfort, and luxury accessories. To continue to educate and encourage our dealers so that you'll never be kept waiting or wanting.

Get to know us better.

We're ready to be your number one source for golf cars, and we're anxious for you to know more about Columbia. Our dealers have the details about the golf car company that understands *your* business. Contact the one nearest you, today.

If you have any questions, please call Mr. Noll at his toll-free number, 1 800 222-4653. If you prefer, write to him. Joseph Noll, Columbia Car Corporation, P.O. Box 3069, Madison, WI 53704.

*Major engine components defined as cylinder, piston, cylinder head, crankshaft assembly, and bearings.

**Master drive system consists of solenoids, resistor, time delay, diodes, and speed switch.

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Whether you apply Roundup with a backpack sprayer or a hand-held wiper, it effectively controls weeds *wherever* they grow. Around shrubs and bushes. In sidewalk cracks. Along driveways. At the base of trees. Along fences. In and around flowering ornamentals. Spot lawn renovation. Edging around obstacles. You name it—there's virtually no limit to the uses of Roundup!

So reach for Roundup before you begin your next lawn care job. It'll help make weed control faster and easier—which can mean more profit for you.

FOR A FREE GUIDE TO ROUNDUP, CALL 1-800-621-5800 TOLL FREE. IN ILLINOIS, CALL 1-800-972-5858.

Monsanto

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GREEN INDUSTRY NEWS

Indianapolis is set for lawn care show

More than 1,500 professionals involved in the lawn care industry are expected to attend the third annual Professional Lawn Care Association of America's Convention and Trade show Nov. 16-18 at the Indianapolis Convention Exposition Center. Former U.S. Secretary of Agriculture Earl L. Butz will be the keynote speaker.

The program has been expanded to include more than 150 booths, 10 speakers addressing key issues in the industry and presentations on a variety of topics useful to the lawncare professional in the current economy.

"PLCAA has developed a dynamic program geared to assist the lawn care professional in these challenging times," said Marty Erbaugh, current president of the PLCAA.

The keynote speaker is currently Dean Emeritus of Agriculture at Purdue University. Butz will discuss "Populism, Politics and Progress," a presentation on the free enterprise system and the essential need for profits in it.

Other speakers include:

-Richard Lehr, Chairman of the Labor Department of a Birmingham, Alabama law firm, discussing "Preventive Employee Relations for the Lawncare Businessman."

-Gerald Sweda, Manager of Corporate Sales Training, O.M. Scott & Sons Co., will demonstrate how believing in yourself can help motivate those around you.

-Lawrence D. Kokkelenberg, Ph.D. will outline in his presentation, "Increase the Bottom Line Through Improved Customer Relations.

-Jerry Faulring, Chairman of the PLCAA Governmental and Industrial Affairs Committee and Immediate Past President of PLCAA, will discuss "Government Regulations Include More Than Just Pesticides."

-Wilbur Wagner, Manager, Mail Classification Center, Indianapolis, will address "Postal Regulations and Services" to help members find efficient, economical means of promoting their businesses through the mail.

-Bob Miller, Ph.D., of ChemLawn Corporation, will give a "2,4-D Coalition Update" and discuss ways members can assist in one of the more controversial issues facing the industry.

For more information about the convention, contact Professional Lawn Care Association of America, 435 North Michigan Ave., Suite 1717, Chicago, IL 60611, (312) 644-0828.

COMING SOON

New Jersey Turfgrass Expo 82, Resorts International, Atlantic City, NJ, Dec. 6-9. The annual turfgrass educational conference and trade show sponsored by Cook College, Rutgers University, and the New Jersey Turfgrass Association. Golf, sod, athletic fields and lawn care are discussed in educational sessions. Regional distributors and national manufacturers participate in trade show. Contact Henry Indyk, Soils and Crops Dept., Cook College, Rutgers University, PO Box 231, New Brunswick, NJ 08903. (201) 932-9453.

Ohio Turfgrass Foundation Conference and Show, Columbus Hyatt House, Columbus, OH, Dec. 7-9. The first show to stress lawn care held in conjunction with Ohio State University. Packed educational sessions and large variety of turf and golf course equipment. Contact John Street, Ohio Turfgrass Foundation, 1827 Neil Ave., Columbus, OH 43210. (614) 422-2592.

EQUIPMENT

Sawtelle wins Jacobsen distributor award

Jacobsen's president John Dwyer and vice president Roger Thomas presented its Distributor of the Year plaque to Chester Sawtelle of Sawtelle Brothers, Swampscott, MA. Sawtelle is a distributor of turf and maintenance equipment.

Distributor of the Year awards also went to Watson Distributing, Houston, TX; Paul Blakeney Co., Oklahoma City, OK; Interprovincial Turf, Calgary, Alberta, Canada; Colonial Motor Co., Dallas, TX; Robison's Lawn and Golf, Grandview, MO; Fallis Turf Equipment, Richmond, BC; and Horst Distributing, Chilton, WI.

Jacobsen's Distributor of the Year: pictured are (left to right): Chester Sawtelle, Sawtelle Brothers; John Dwyer and Roger Thomas, Jacobson; Frank Higgins and Joel McKoan; Sawtelle.

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There's a lot of grass to mow in the Windy City, and Chicago's Park District uses rugged Woods mowers to help them cover a lot of ground.

But Woods mowers aren't designed just for large areas. In fact, we make mowers that cut swaths from 3 1/2 feet all the way up to 20 feet. Plus, we offer more rearmount and undermount models than any other manufacturer of tractor-powered mowers. New tractors or old, domestic or imported, Woods has a mower to fit the tractor and the job.

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GOLF UPDATE

Winter seminars offered by NGF, GCSAA

The National Golf Foundation and the Golf Course Superintendent's Association of America are sponsoring golf course management workshops this month.

NGF's annual Golf Course Management Workshop will take place in Orlando, Nov. 29 to Dec. 2. The four-day event allows close personal instruction to managers of all types of golf facilities. During the event, professional golfer Jack Nicklaus will receive the Herb Graffis Award for his contribution to the game of golf.

More than 80 golf facility managers from the Air Force are expected at the NGF seminar. The event will take place at the Americana Dutch Resort Hotel in Disney World. Reduced room rates will be available for three days before and three days after the event. Contact NGF for more information: 200 Castlewood Drive, North Palm Beach, FL 33408. (315) 844-2500.

GCSAA will sponsor two seminars in the Chicago area late this month. They both take place Nov. 20-22. Ornamental Pest Management is the title of a course taught by David Nielson from Ohio State University and Donald Short of the USDA Northeast Forest Experiment Station. Both are top men in the field. A Human Resource Management Course will be presented by consultant Ron Fream at the same time. Contact GCSAA for more information: 1617 St. Andrews Drive, Lawrence, KS 66044. (913) 841-2240.

EPA survey raises ire of superintendents

Overstated endorsement by NGF and GCSAA and misuse of private information are the charges of some superintendents who received a lengthy questionnaire from the American Association of Retired Persons about pesticide usage.

NGF reports that many superintendents are hesitant to fill out the questionnaire since they are aware of the Environmental Protection Agency's involvement in the project. GCSAA said in its "Newsline" that the survey "appears to be the harmless result of an overzealous, well-meaning group who will probably be willing to work closer with GCSAA in the future."

A similar survey is being mailed to many other user groups of pesticides. The Professional Lawn Care Applicators Association and the National Arborist Association have endorsed surveys for those industries. The staff of these organizations obviously feel the intention of the survey and the use of the data are constructive not regulatory.

GCSAA tags Powell for information

GCSAA has hired Lewis (Chip) Powell Jr., to replace Larry Goldsmith as Director of Information Services. Powell will also serve as assistant director of education under Jim Prusa, director of education.

Powell has been superintendent at Deerwood Club in Jacksonville, FL since 1978. During that time he has been very active in the association. Prusa, another former superintendent, and Powell will take GCSAA's training programs into the 21st Century.

NEWS *from page 8*

SEED

Grau, Penngift vetch honored by governor

Pennsylvania Governor Dick Thornburgh signed Senate Bill 1042 recognizing Penngift Crown Vetch as the state's Beautification and Conservation Plant and Dr. Fred Grau of College Station, Maryland as the discover.

Pennsylvania has used Penngift along highways since 1958. Grau, was extension turf specialist at Pennsylvania State University with Dr. William Musser in 1935, when he discovered Penngift. He has since been director of the USGA Green Section and codeveloper of the aerifier for West Point Products Co., now owned by Hahn.

Thornburgh said Penngift has been successfully used to beautify and control erosion on more than 50,000 acres in the state.

CHEMICALS

Fluid fertilizer group is launched

Dr. James Batchelor from the University of Arkansas assumes the new position of administrator of the Fluid Fertilizer Foundation this month. The new research branch of the National Fertilizer Solutions Association is funded by more than $600,000 to explore and expand fluid fertilizer technology.

Although the main focus of the group is agriculture, chemical applicators in the landscape and golf industries may benefit from the research. Dennis Brown of NFSA told *Weeds Trees & Turf* he estimates 60 to 65% of lawn care firms use liquid applications.

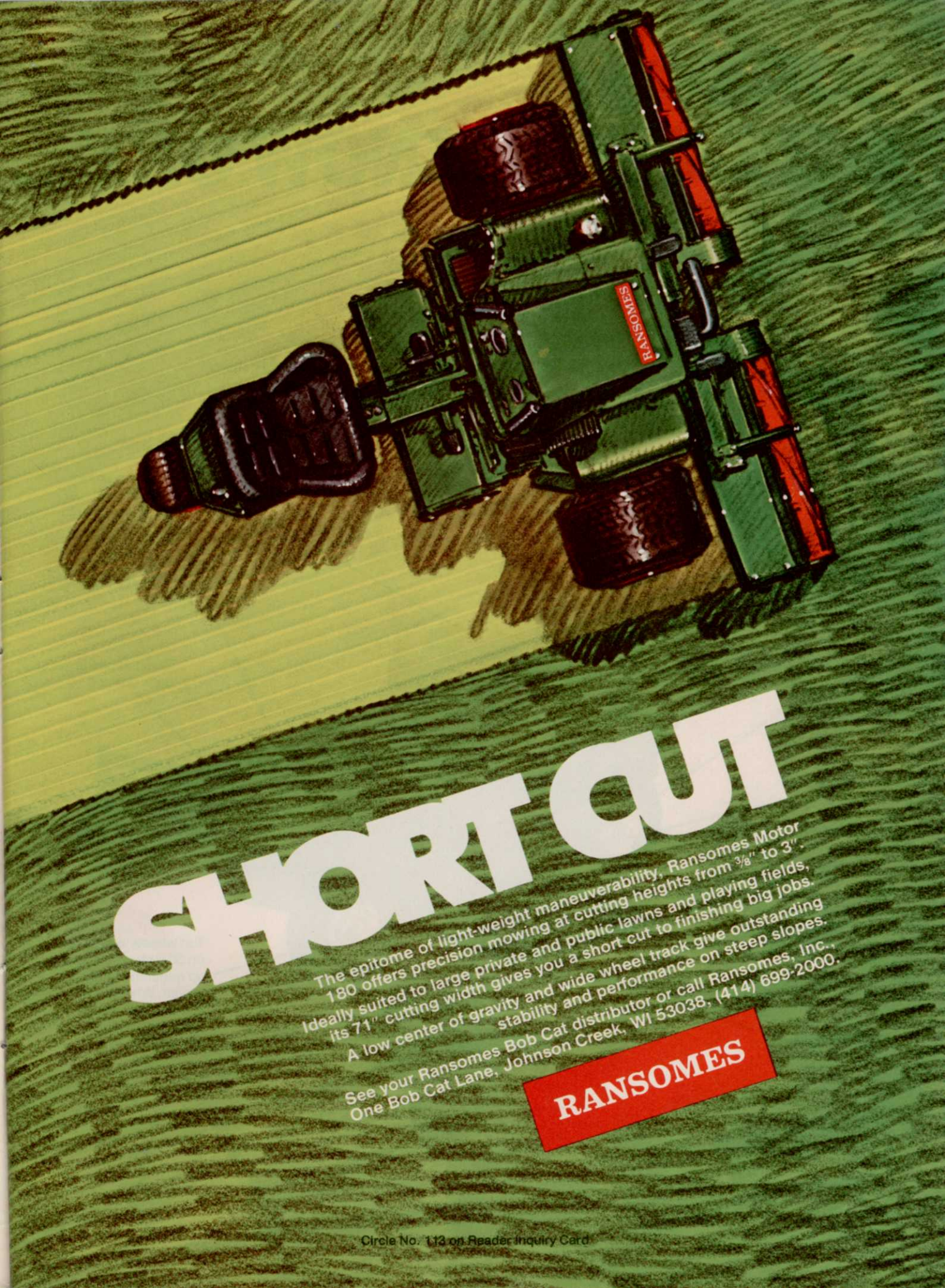
The Fluid Fertilizer Foundation was created in July by NFSA and Batchelor takes responsibility this month. Batchelor has been extension specialist for the University of Arkansas in soil fertility, plant nutrition, crop protection and irrigation. He can be reached at NFSA, 8823 N. Industrial Rd., Peoria, IL 61615. (309) 691-2870.

EXTENSION

Ohio surveys users of extension program

The Cooperative Extension Service of Ohio State University is holding public opinion forums and polling people on extension mailing lists to assess the direction of extension programs in the state.

Continued on page 14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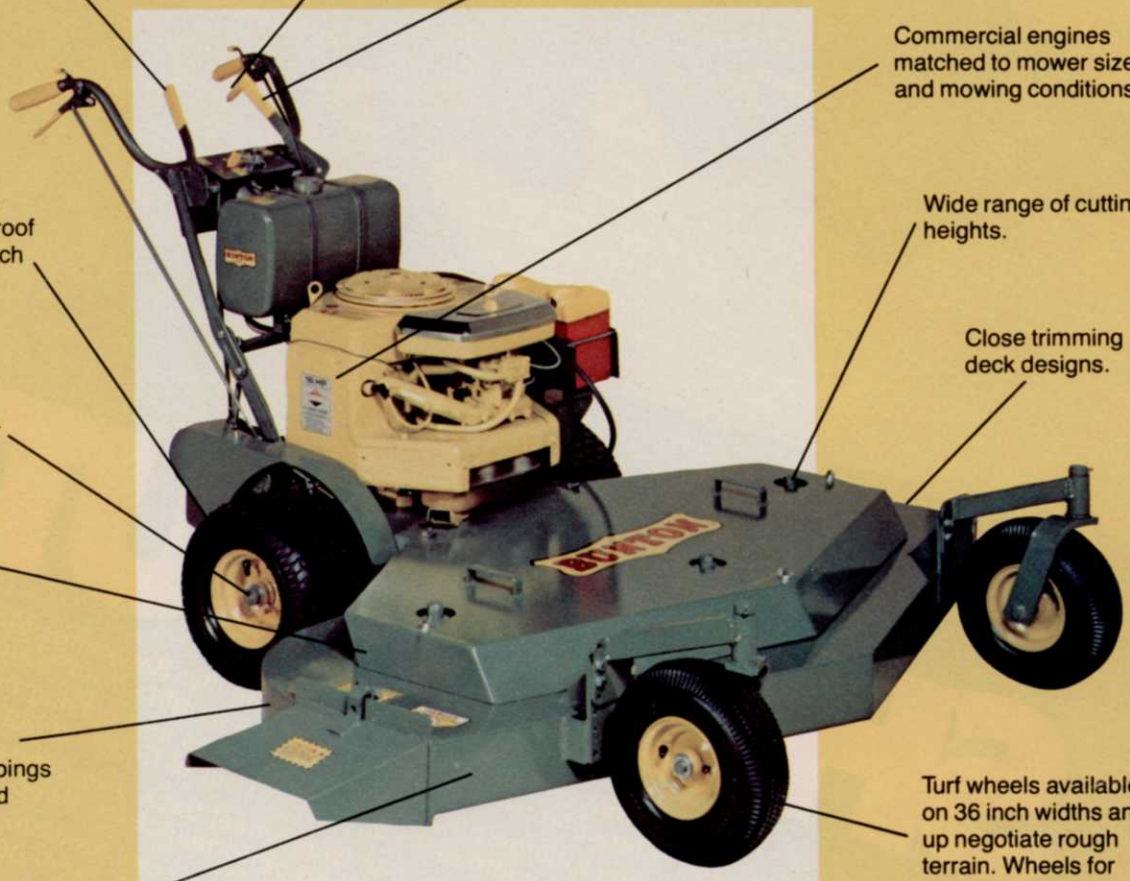

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LANDSCAPE UPDATE

Take a look inside . . . ALCA Miami conference

As more and more exterior landscape contractors dabble with interior landscape contracting, the Associated Landscape Contractors of America is inviting everyone to explore the interior foliage business this winter at its Annual Convention, in Miami, FL, Jan. 15-21.

ALCA has timed its show to coincide with the Tropical Plant Industry Exposition at the Coconut Grove Exhibition Center, Jan. 20-22. Exhibitors can gain double exposure from the joint ALCA/TPIE trade show. Convention-goers can also benefit from the one show for two markets.

NBC weatherman Willard Scott will keynote the show. Strong emphasis has been placed on selling and pricing. Washington, D.C. lawyer James Welsh will speak on antitrust precautions in pricing. Special workshops for interior landscaping, land reclamation, and design/build are scheduled. A complete day will be devoted to exterior landscape maintenance.

The Miami Hyatt Regency is the headquarters hotel. Contact ALCA, 1750 Old Meadow Rd., McLean, VA 22102, for more information.

Colton assumes president's job at Western

Eighteen years of service to Environmental Industries paid off to Stanley Colton when he was recently elected president of Western Landscape Construction, a division of Landscape Industries Inc.

Colton's promotion followed the resignation of Bruce Braunstein in early September. Braunstein cited personal reasons for his resignation.

Colton is author of a book on landscape cost estimating and sits on a committee at U.C.L.A. to evaluate landscape architect licensing criteria for California. Western Landscape Construction has two offices; one in San Diego and another in Santa Ana.

ASLA elects first woman president-elect

Darwina Neal, senior landscape architect of the National Capital Region of the National Park Service in Washington, D.C., has been elected president-elect of the American Society of Landscape Architects. She will become president of ASLA in 1984.

Theodore Wirth will be installed as president for the 1982-83 term during the ASLA Annual Meeting in Honolulu, Hawaii, this month. Calvin Bishop wraps up his term as president at the meeting.

Neal breaks a 35 male president string. More than 2,400 members voted in the election, an association record.

Neal's goals are to influence public decision-making to ensure full consideration of environmental issues, increase the profession's visibility, and emphasize continuing education among professionals.

NEWS *from page 10*

Fred Buscher, extension agent-landscape horticulture, said in his Landscape Horticulture Newsletter that the state has established a long range planning committee for extension to study extension program priorities for the next ten years.

The committee has arranged a series of public meetings and a survey to help it in planning. Buscher hopes to find at least two representatives from each county in the state to speak for horticulture programs.

EQUIPMENT

Ford Tractor offers low-rate financing

Ford's better idea this year for tractors is low-rate financing and special lease arrangements for qualified buyers until November 30. Both programs offer a 9.5% annual percentage rate for certain industrial and agricultural tractors.

R.J. Nicolazzi, operations manager, said the company also offers a program where the first installment is not due until November 83. Tractors under the program include over-30 h.p. farm tractors, the 1000 series, Series 10 and TW Series tractors.

The special financing and payment programs also apply to attachments purchased with specified tractors.

Ford Tractor General Sales Manager J.L. Johnson says, "Twice as many customers will rent or lease tractors during the 80's as did during the 70's. It's apparent that renting and leasing saves money normally used for a down payment, preserves available credit, and may provide tax advantages. Ford is offering short and long-term lease programs.

EQUIPMENT

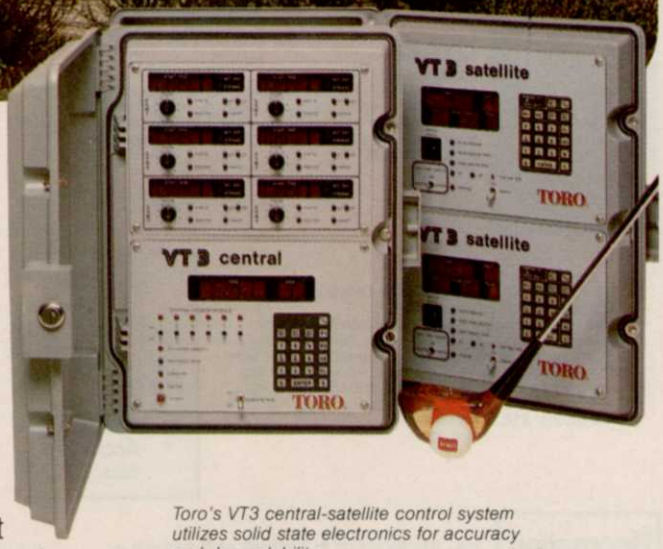
McGrath named GM of Locke mowers

Kevin McGrath, formerly sales manager, has been promoted to vice president and general manager of Locke Manufacturing Inc., by the board of directors of the parent company, Orag Inter Ltd., Baden, Switzerland.

McGrath replaces Hans Frymann who was made general manager by Orag when it purchased Locke four years ago. Locke has been making reel-type commercial mowers for more than 50 years.

McGrath said he plans no major product changes at the moment but does plan to broaden the product's exposure in the U.S. Orag is a major distributor or turf equipment in Europe.

9 of the top 10 golf courses in America have Toro® irrigation



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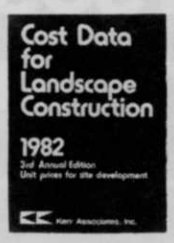

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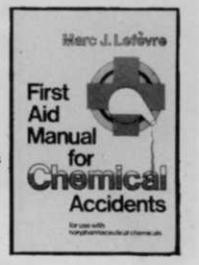

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WTT 112

GOVERNMENT UPDATE

by William Hoffman

Office supplies act blasted by IPA

The Interior Plantscape Association has released a "White Paper" on a Congressional bill intended to control office machine dealers, which could limit the number of plant dealers.

The Retail Dealers Agreement Act (S. 1256), introduced in May, requires suppliers to notify current dealers of plans for new dealerships in their market area, defined as a 20-mile radius of a dealer's primary place of business.

Upon receipt of notice, the existing dealer may seek an injunction in federal court against the establishment of a new dealership in his market area. The court would then determine if such a new dealership was warranted and the supplier would carry the burden of proof.

The IPA paper says, "Growers and brokers will be restricted in their ability to make marketing decisions based on current conditions and needs, unable to change or expand their retail distribution channels in response to demand."

The Act has the potential to restrict expansion by any type of supplier to for the office environment. IPA encourages everyone to write representatives as soon as possible about this "anticompetitive" legislation.

Organic agriculture is on collision course.

The White House and the Congress are on a collision course in regard to the role of organic farming in the nation's agricultural system. In 1980 the U.S. Department of Agriculture (USDA), under a 1977 directive from the Congress, completed a study on organic farming and assigned a research employee to the activity full-time.

John R. Block, Secretary of Agriculture, in the Reagan Administration, has opposed any new bills in the Congress that call for more research on organic farming. He stated that this is the wrong time to introduce new farm programs and new federal spending. Congressional proponents argue that this might be a way for farmers to cut their costs and to protect their land from overcultivation. USDA estimates that about 2% of the nation's commercial farmers use organic techniques and that more have asked for information. However, USDA earlier this summer assigned their one researcher new duties that take about one half of his time and in a surprise move in late August included this scientist among the 600 potential employees who might be riffed in FY 1983. Congress is up-in-arms.

Ozone layer not at peril from fertilizer

Research scientists from the U.S. Department of Agriculture have shown that less than 2% of nitrogen fertilizers applied to crops escapes from the field as nitrous oxide and are not the danger to the Earth's ozone layer as earlier predicted. This layer screens out harmful ultraviolet radiation, which, in excess, can increase incidence of skin cancer.

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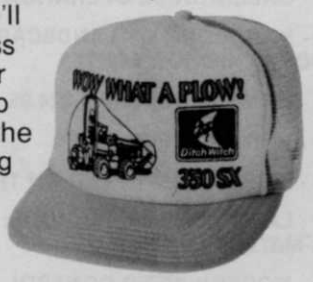

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PART II - FAIRWAYS

PREVENT OR CORRECT DRAINAGE AND TRAFFIC TO SLOW DOWN COMPACTION

By RON FREAM, golf course architect

Drainage problems *are evident on this fairway.*

The link between tee and green is regularly overlooked when construction occurs. How often is the topsoil scraped to form sand bunkers, elevated tees, or greensites? The underlying hard pan, impermeable or infertile subsoil that remains offers little as a friable growing medium.

Fairway areas, the aprons which surround a putting green, and the approach areas to the greensite deserve attention during construction or remodeling.

Earthmoving can be extensive in order to make unusable land more usable, to prevent or eliminate blind shots, and to transform the flat into the interestingly contoured. Earthmoving should consider conservation of topsoil, existing and proposed drainage patterns, and reestablishment of acceptable soil tilth.

Swales can be added to keep water from discharging onto a fairway.

It is possible for the golf architect to anticipate future drainage problems and to prepare a drainage plan for fairway areas as part of the set of construction working drawings. It certainly is less expensive to install catchbasins and subsurface drainage pipes during initial construction then to come back later and have to install them while play is underway.

Grading of fairways can provide surface drainage swales to collect and direct water flow. Attractive

contouring can be the result which is also fully machine mowable. Interceptor swales, catchbasins or open drains can be provided to prevent off course water from discharging onto a fairway.

Greensite aprons and approach areas frequently need soil amendments although these areas are ignored. The addition of organic humus, sand, the most desirable available sandy loam topsoil or a combination, can greatly assist in enhancing turfgrass growth.

It would be our recommendation to consider select gravel encasement, topped with washed sand in all entrance or exit areas of the apron around the putting surfaces. These drainage lines can greatly assist in carrying away excess surface runoff or subsurface seepage water. In either case, a reduction in compaction will occur.

In some specific instances of very heavy native soils, the green aprons may have to be covered with a sand and humus veneer in order to provide a drainable and compaction resisting seedbed.

Soggy areas fronting greensites are the result of surface drainage from the greensite and/or discharge of subsurface drainage pipes in the center of the fairway approach. A golf architect or construction superintendent should never stub off a drainage line in the approach area. However, all too often that is the situation, perhaps due to lack of concern or as a budgeting expediency.

The small extra cost of continuing all drainage outlets to sumps, ponds or other out-of-play areas is an investment in long term maintenance savings. Sand bunker drainage outlets should be similarly treated.

Inadequate tree clearing on a heavily wooded site can cause drainage problems due to insufficient sun to evaporate the water or inadequate air movement. Excessive shade also can induce disease problems. Turfgrass will not grow successfully in excessive shade and only playable turf is of primary consideration. Judicious tree thinning or removal may be a necessary evil but it can definitely prevent various maintenance problems.

A poorly designed or poorly functioning irrigation system can contribute greatly to compaction problems. Excessive wetness anywhere within the golf course will contribute to compaction and other problems as traffic passes. An irrigation system with improperly spaced sprinkler heads, heads with clogged nozzles, heads spraying directly upon adjacent trees or incorrect pumping pressure can all contribute to future problems.

Restrict golf carts *to paths wherever possible.*

Inadequate allowance for prevailing winds is another commonly encountered cause of both excessive wetness and excessively dried out areas. When effluent water is recycled for golf course use, an ever increasing occurance, compacted or poorly drained seedbeds inhibit proper periodic leaching and can contribute to excessive salt build-ups and resultant turfgrass deterioration.

No matter how sophisticated the irrigation system or the number of digital readouts on the controller, if the design engineering is not correct, if the pumping plant is inadequate or if the operator of the system uses it incorrectly, compaction and other maintenance problems are sure to be the result.

The use of wide tires on all maintenance equipment or using dual wheels in place of singles will assist appreciably in reducing the incidence and severity of compaction. This effort should include all tractors, utility vehicles, the superintendent's truck and any other maintenance equipment.

The new electric fairway reel mowers present an opportunity to mow at a high and uniform rate of speed while applying less weight to the turf and requiring a lighter tractor to pull the units.

Golf carts may be considered a physical and financial necessity at many courses. Even with wide turf tires, repeat traffic of these vehicles contributes to the inducement of soil compaction on fairways. While golf cart paths are not an aesthetic beauty and may hinder or interfere with play at times, they are in the best interests of turfgrass maintenance. At the very least, paths should be provided in the most heavily concentrated traffic areas at tees and greens.

Careful, thoughtful positioning of the cart paths is necessary. Allow enough width so that carts do not consistently run over the edge. Maintenance equipment should also be required to travel on the cart paths wherever possible.

On courses where bag trollies are in use, it should be mandatory that every pull trolley have the recently introduced 4 inch (10 cm) wide wheels rather than the old style narrow ones. One bag trolly will not cause much problem but successive traffic by even these seemingly inconsequential devices will, with time, contribute to the compaction problems and the resultant added maintenance expenses. **WTT**

Ronald Fream is a well published golf course architect based in Santa Rosa, California. He studied horticulture and agronomy at California State Polytechnic University and Washington State University. He has worked under Robert Muir Graves and Robert Trent Jones and performed design work in 25 countries. Ronald Fream Partnership was formed in 1979, later called Ronald Fream Design Group.

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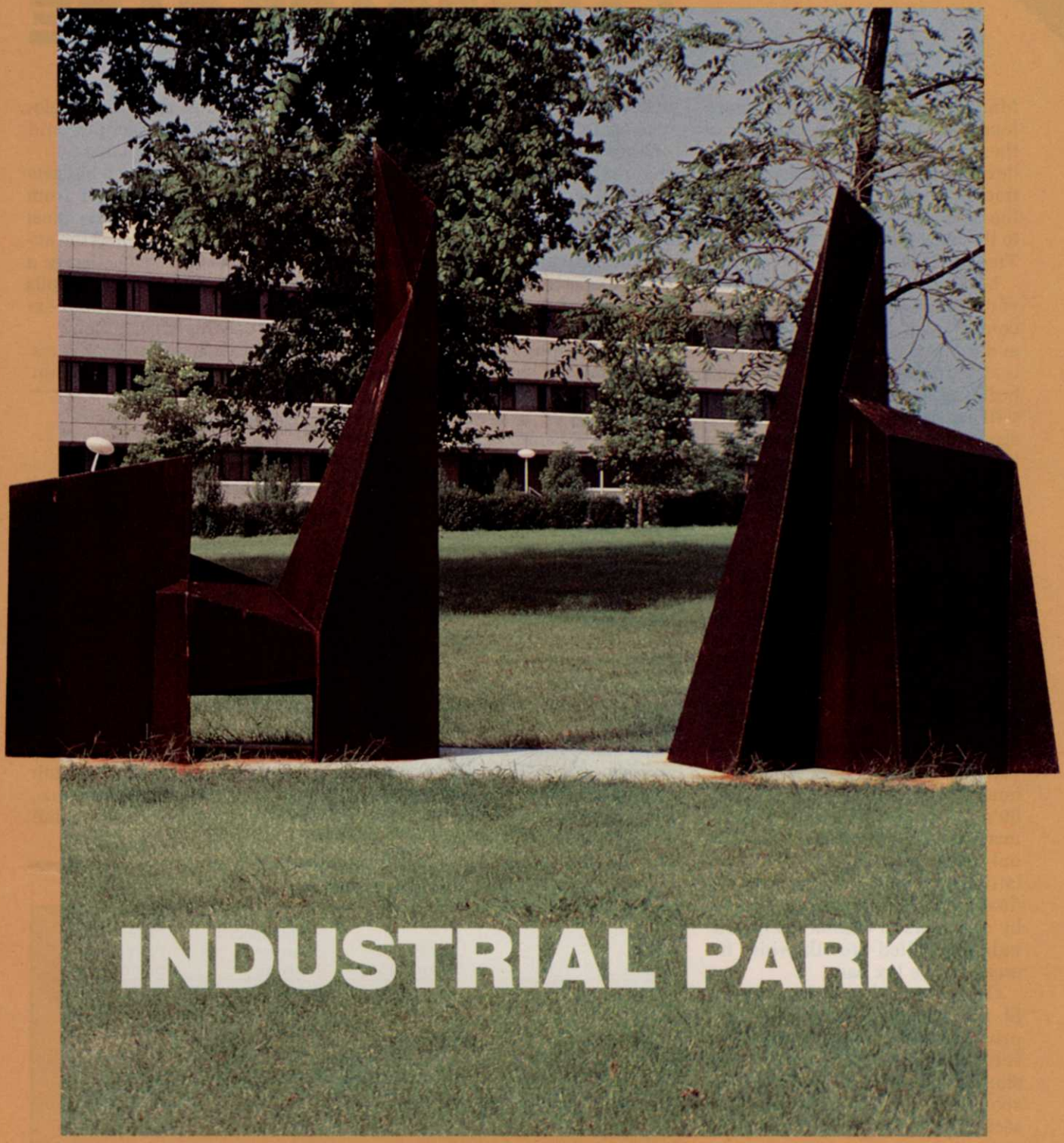

INDUSTRIAL PARK

WEEDS TREES & TURF

Research in LANDSCAPE MANAGEMENT

THE FUTURE IS BRIGHT FOR INDUSTRIAL PARK LANDSCAPE CARE

Management of industrial park landscapes is more a function of the individual tenant within the development, or a landscape contractor hired by the tenant, than the developer or owner, according to the most recent survey by *Weeds Trees & Turf* magazine.

More than two thirds of the survey respondents indicated total control over landscape planning and maintenance by tenants. Typically those parks where each building has a number of tenants will be managed by the owner's agent. Those parks where entire buildings are built and owned by individual companies will be less involved in landscape decisions.

Nearly half the industrial park representatives indicated their parks are not fully developed. Combined with the attractiveness of other ventures due to high interest rates, industrial parks may face a lag of investors in the near future.

Despite a temporary slowdown, industrial park development is a practical alternative to older, more expensive buildings in urban centers. The idea took off in the late 60's as the U.S. Highway System made suburban industrial parks not only accessible to truck transportation, but closer to employees. Industrial parks were often supported by chambers of commerce to provide controlled growth while increasing the tax base.

One industrial park developer in St. Louis told *Weeds Trees & Turf* private industrial parks are often sold to tenants five to ten years after development. Many have been sponsored by private investors who seek a five to ten year payback. The attractiveness of industrial parks as an investment faded slightly under high interest rates, when investors were guaranteed 12 to 15 percent without great risk. As money rates fall the industrial park once again becomes attractive.

Other industrial parks operate like residential developments, where streets, utilities and rights-of-way are taken over by the city after the development is built. Whether private or public, industrial parks face zoning regulations often slanted toward "clean" industry.

Survey respondents said companies pay for landscape maintenance in a monthly maintenance fee, directly to a landscape contractor, or separate payment to the park staff. Each represents a third of the survey. The park staff may contract out all or a portion of the work. Two of the property management firms in the survey had landscape divisions.

In addition to the multi-company park, a larger group of single-company, campus style offices exist in suburban areas near major cities. Distinguishing between the two types of facilities for this report would have limited value. Considerably more research is needed to quantify the market. Projections from data we have would suggest there are more than 3,000 industrial parks in the U.S. Add the single-company industrial campus and the total approaches 10,000.

Landscape maintenance budgets of our respondents ranged from $3,000 to $1.2 million. The most common figure $18,000, and the average was $30,350. Projection to a universe of 10,000 facilities results in landscape maintenance expenses exceeding $200 million.

Park size ranged from four acres to 5,000 acres. The most common size was 25 acres, but the average was 200 acres. Half the industrial park respondents indicated acreage for future development exists in current parks. This would reduce the area intensively landscaped. Overall, maintenance cost ranged from $150 to $720 per acre.

> Tenants have considerable control over landscaping of their buildings.

Nearly two-thirds of the respondents are responsible for both interior and exterior maintenance. They have an average full-time staff

Table 1

Planning and Buying by Industrial Park Managers.

Month	Percent Planning	Equipment Percent Buying	Chemical Percent Buying
January	55	65	30
February	35	65	50
March	40	55	100
April	25	65	70
May	15	30	50
June	25	5	10
July	40	20	5
August	60	20	0
September	75	30	25
October	50	25	5
November	35	5	15
December	25	5	30

of 6 with part-time and seasonal help of 2 to 5.

Chemical purchases per year averaged $4,250 for herbicides, $3,000 for fertilizers, and $2,075 for insecticides.

Industrial parks had an average of 6 push mowers, 3 riding mowers, 4 hand carried compressed air sprayers, 2 chain saws, and 3 pickup trucks. Larger spray units were owned by more than half the respondents and a third had turf aerifing devices. Roughly half the parks had some form of irrigation to serve less than half the acreage. Almost two thirds of the irrigation systems were provided by the developer.

Local landscape supply distributors are used by three quarters of the respondents. More than a third bought some chemicals or equipment from local retail suppliers. A fifth bought some materials directly from the manufacturer.

Two thirds of the survey respondents are responsible for both interior and exterior maintenance.

Summary

As interest rates drop, not only will investors see industrial parks as more attractive, but companies seeking more efficient offices will become tenants or owners. The amount of undeveloped space in industrial parks may absorb the initial recovery, but the concept of suburban industrial parks remains an effective alternative to rising leases in urban centers.

As tenants take over parks from developers more landscaping work will be available to contractors. The fact that some property management firms are creating landscape divisions reflects the profitability and potential for this market.

Suburbs will continue to encourage development of clean, planned industrial parks to moderate the tax burden on homeowners. The motivation for future expansion of industrial parks exists today and will continue to grow.

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Amount of Rebate:

Product	Purchase Quantity	Rebate Value For Each Unit
BAYLETON 25 WP	12# case	$10.00/cs.
DYRENE 50 WP TURF	32# case	5.00/cs.
OFTANOL 5G	40# bag	2.00/bg.
SENCOR 75 TURF	30# case	8.50/cs.

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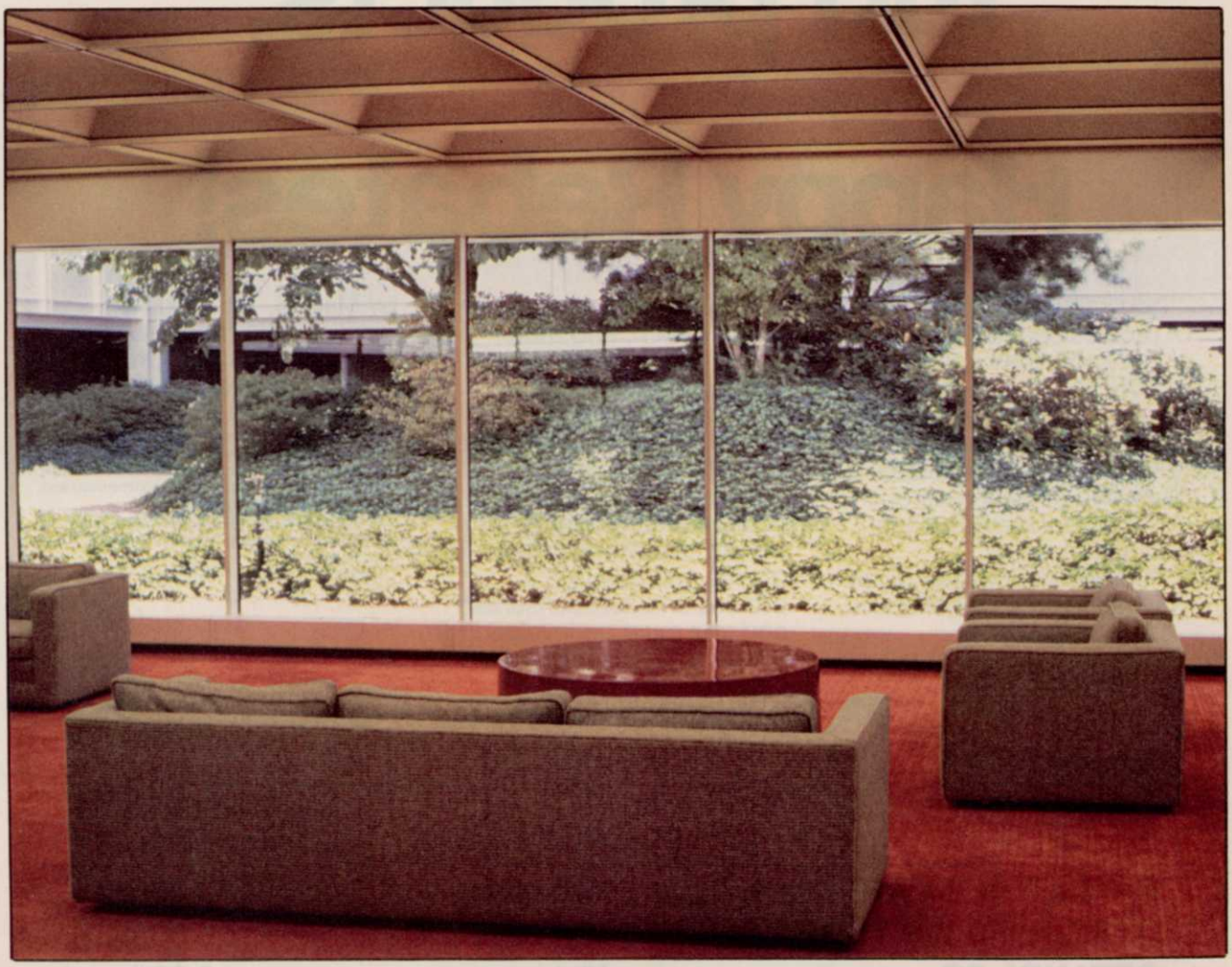
Circle No. 112 on Reader Inquiry Card

Profiles in LANDSCAPE MANAGEMENT

GE SUPERINTENDENT HAWKS SPECIFICATIONS FOLLOWING EARLY TURFGRASS DISASTER

By THOMAS PACIELLO



View *makes you feel like your in the headquarters of one of the country's largest corporations.*

Two years after Elmer Toth accepted the job of superintendent of grounds and facilities for General Electric's corporate headquarters in Fairfield, CN, he could drop a quarter and not hit a blade of green grass. As you can imagine, GE's appreciation of proper maintenance skyrocketed.

The original turf failed because the topsoil left by construction crews was poor and the turfgrass used was not winter hardy. One cold winter and one hot summer wiped out acres of turf. Since Toth joined GE following construction he could only try desperately to save a poorly specified turf.

> Toth's main job is to decide how specifications should be altered from one year to the next.

Those days are just a memory now. Visitors at GE are tempted to bring along a three wood to tee off the fairway-like lawns. All of the 45 acres maintained are handled by contractors under the supervision of Toth. Specifications are his keys to control.

Outside contracting, according to Toth, has worked out just fine. "We're very happy with our contractor, Michael Labriola Inc. They take a lot of pride in their work and that is very important to me." He admits that there is a big difference between contractors and in-house staff. "With outside contractors I

follow a 'hands off' policy unless they stray from the schedule," said Toth. "You must be very careful in who you pick. The lowest bidder might not be the best choice." In dealing with contractors, Toth pointed out that one of the most important elements is well-written specifications. Toth wrote both the contract and the specs so he is intimately familiar with their contents. Every spring Labriola submits a schedule that details just how and when his firm will perform all the tasks outlined in the specs. One of Toth's main responsibilities is to decide just how the specs are altered from year to year.

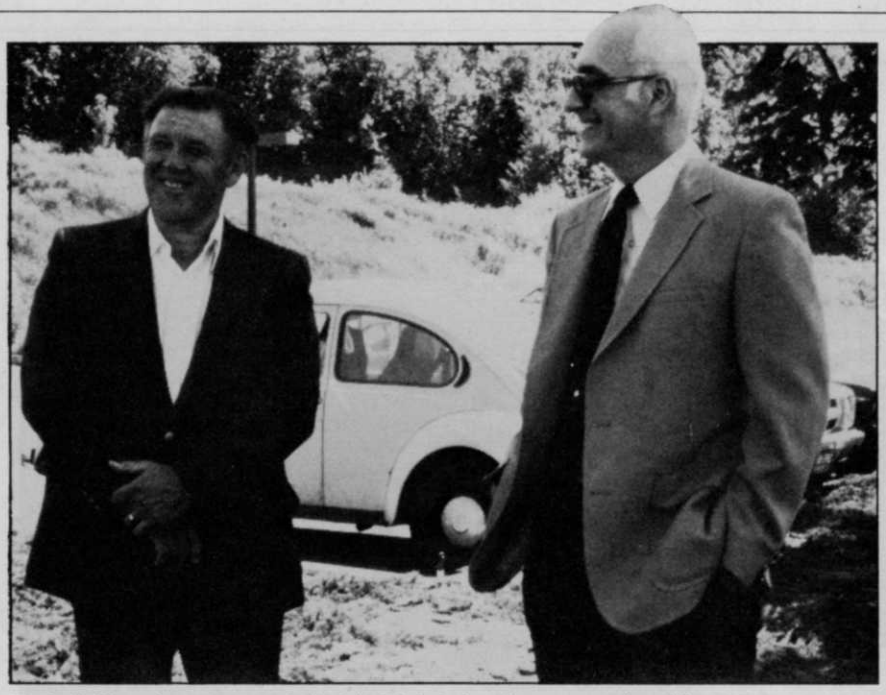
The specs are divided into three areas: grounds maintenance, landscape maintenance and lawn maintenance. Grounds maintenance incorporates sweeping and snow removal duties, lawn maintenance details the fertilizing, irrigating and mowing of all lawn areas, and landscape maintenance pertains to ornamentals, trees, ground covers and other areas.

Winter is a particularly busy season at GE due to the harsh weather. The maintenance crew plows continually when it snows, not giving the snow a chance to build up. The roads are also covered with a sand/salt mixture. Since its opening GE has only had to close the office once due to untravelable roads.

Spring is the toughest season for the crew, due to the number of jobs that have to be done. Any damage that was done during the winter has to be repaired. This is also the time that all planting, trimming, pruning, and in general, preparation for the growth season takes place.

One cold winter and one hot summer wiped out GE's turf

Mowing and keeping the lawn green are the two basic tasks during the summer. A lot of irrigation and fertilizing goes into maintaining the green color.



Toth (left) *and contractor Labriola (right) plan five years ahead for GE.*

Fall is the only relatively slow period at GE. Leaves are removed from lawn areas with air brooms and Toro Groundmasters. A snow fence is erected to battle the harsh winds which would otherwise dump snow on the driveways. During the fall the trees are checked for problems and additional pruning is done if necessary.

In maintaining a good relationship with his contractors, Toth noted that chemical application timeliness is one area that he keeps a watchful eye on. "When I see the contractor's schedule I have to decide on the accuracy of the chemical applications," said Toth. "The fluctuating weather always makes this difficult and we sometimes disagree on which dates will provide the best control." He points to the application of crabgrass herbicide this year. It was very warm in May, which foretold of an early spring. Following the herbicide application the weather got cold and rainy and the crabgrass failed to germinate until July. Meanwhile the herbicide was diluted and ran off with the drainage. The result was more crabgrass at GE than usual, although it was not a devastating problem. Toth pointed out that with insect and weed control he is opting for less than 100% if he can significantly cut down on his chemical usage. All the chemicals eventually drain into a number of holding ponds and Toth believes it is environmentally sounder to move towards an IPM (integrated pest management) approach rather than overusing chemicals. This will be a gradual process, however.

The lowest bidder might not be the best choice

One of the reasons Toth is vigilant on chemical application is because of the results when there is an error. "I make sure the spraying is done on schedule because if you miss, you might not have another chance to control the insects, weeds and disease," said Toth. "With exterior work you may have to live with your mistakes for a year before you can rectify them. Do it right the first time so you don't have to do it again." Toth had a mite and lacebug problem on his pieris and rhododendron. This caused a yellow mottling on the leaves that can't be remedied this season.

Continued on page 32

GE *from page 31*

Trimming and all other landscape tasks *are performed by Labriola's crew.*

The landscape maintenance contract is very inclusive of the many areas that make up a corporate headquarters. One of the few duties that is not in the contract is the replacement of trees. Toth forecasts future budgets as much as five years ahead and tree replacement is one of the areas that he leaves out. By forecasting so far ahead Toth is able to secure funds for projects ahead of time and also be cost effective in his maintenance. While his forecast for 1983 is detailed, his forecast for 1987 is much more vague. He adds more detail to each upcoming year and always stays five years ahead. He told *Weeds Trees and Turf* that this was difficult for the first five years of the contract period but now it is mostly fine-tuning. The contract is budgeted at approximately $200,000 for 1982 and that includes funds for emergency projects that are necessary but don't appear in the specs. The contract is increased yearly, usually around 10-15% according to the ravages of inflation and the increased scope of the contract.

Being at GE since its opening in 1974 has been a big asset to Toth, particularly in detailing the specifications of maintaining the landscape. "To be plunked down on a property with no prior experience is very difficult," said Toth. "It takes at least a year to see how the property reacts to the four seasons. The experience helps because I've learned that nothing happens twice quite the same way." Toth regrets not being at GE during the construction period because there are some things he would have done differently. It is no wonder the original grass failed when you realize it was planted on a poor topsoil foundation and it was quick-germinating but *not* winter-hardy. When Toth was installing the irrigation system he decided to top-dress and reseed everywhere and his efforts paid off. The foundation is a predominately tight clay soil and aeration twice a season is a must.

Curiously, because Toth can control the moisture levels on the grounds he does not look forward to nature's inconsistent rainfall. It also wrecks havoc on the mowing schedule. During the summer the grass is mowed once per week and it can take two to three days for the crew to finish all the lawn areas. Even with its large water usage, GE was not restricted during the Northeast water crisis. GE uses city water, which is preferable due to the lack of silt and other particles but Toth is making plans for future conservation so he won't be caught short. The company policy is to keep as much lawn area as possible so in a crisis situation the lawns would get high priority.

One of the unique areas at GE is due to the building design. Described as three square doughnuts, each of the three buildings contains a three-story, 75-sq. ft. atrium. In each atrium is a circular compilation of shrubs, trees and ground cover bordered by a path, which is in turn surrounded by a strip of shrubs, hedges and ground cover. The atria are inaccessible but provide a pleasing vista for employees who border them. The weather conditions vary considerably from the lawn areas and are much more greenhouse-like. There is much less air circulation and it is warmer. The plants have suffered from wilting, leafspot and aphids but the spray program and syringing have helped battle any large infestations.

Toth regrets not being at GE during construction

Since he brought the grass back in 1976-77 Toth has battled infestations at every front and won more than his share. And he did it in a suit and tie without having to push a mower or squirt a sprayer. Armed with detailed specifications as to what he wants done and fortunate to be affiliated with a conscientious landscape maintenance contractor, Toth has maintained General Electric grounds to golf course standards. **WTT**

Subdue.

Controls Pythium blight and damping-off.

No other fungicide works as well as Subdue® against Pythium damping-off and blight because only Subdue has two-way action against these diseases.

First, Subdue gives you systemic control that protects grasses from the inside out. Second, it works in the soil to control Pythium by contact action. Two-way action that keeps turf healthy.

In established turf, Subdue is an ideal preventative treatment for Pythium blight. Plus in newly seeded or overseeded turf, you get protection from Pythium damping off and blight.

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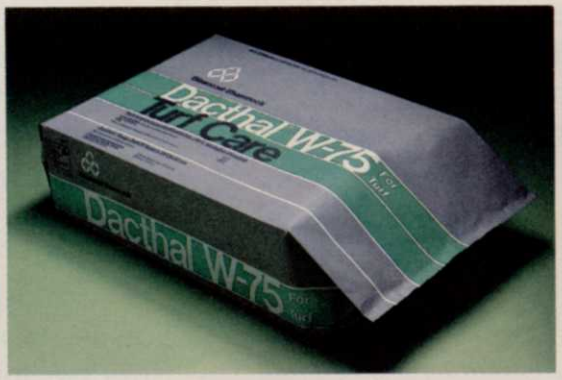
There's a fine line between good turf and better turf.



It's our Turf Care™ product line. Because Turf Care quality products from Diamond Shamrock give you first-rate disease and weed control with real economy all season long. There's no better way to get better turf.

Daconil 2787® fungicide. Unmatched spectrum of disease control.
No other fungicide works as effectively on turf and a variety of ornamentals. Daconil 2787 provides unsurpassed control of 9 major turf diseases plus common diseases on 45 ornamentals. (Also available in wettable powder).

Dacthal® W-75 herbicide. The leading preemergence herbicide is back.
The standard of excellence in turf preemergence weed control will be back for the '83 season.

Whether it's crabgrass or 22 other annual grasses and broadleaf weeds in turf and ornamentals, nothing works better than Dacthal W-75.

Go with the best in '83. Dacthal W-75.

Dacamine® 360D herbicide. Kills perennials better than ordinary 2,4-D.
Dacamine 360D virtually eliminates the possibility of weed regrowth. Works particularly well on plaintain and 70 other tough perennials. Gets white clover* too.

Dacamine 360D also delivers broader spectrum weed kill than ordinary 2,4-D.

And since Dacamine 360D is non-volatile, it won't vaporize even in hot weather. So there's no risk of injury to nearby ornamentals from vapors.

2 Plus 2 (MCPP + 2,4-D Amine). Tough on weeds, easy on the pocketbook.
Designed in a convenient package mix, 2 Plus 2 delivers economical control of pesky common broadleaf weeds on turf and fairways.

For broad spectrum control that's tender on grass and non-harmful to tree roots, use 2 Plus 2.

MCPP-K-4. Early control of tough viney weeds. Specially formulated for use on lawns and golf courses to give early, first-rate control of such hard-to-control weeds as: clover, chickweed, plaintain and black medic.

Amine 4D. Selective, effective and economical. A useful weapon for post-emergent control of a wide variety of broadleaf weeds including dandelions and plaintain.

Amine 4D is ideal for use on lawns, golf courses and commercial areas. For greater economy and broader spectrum of control, tank mix Amine 4D with MCPP-K-4.

Daconate® 6 and Bueno® 6 postemergent herbicides. Proven performers.
Especially effective on such tough weeds as nutsedge, chickweed, wood sorrel, crabgrass and many other grassy weeds.

Both products are ready-to-use liquids with built-in surfactants for uniform wetting. (Bueno 6 sold only in western states for use on turf.)

Turf Care. Better order now for better turf.
Your hard work and expertise and our fine line of Turf Care products are the perfect combination for healthier, more beautiful turf.

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Always follow label directions carefully when using turf chemicals.

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2 Plus 2

MCPP-K-4
Turf Care

Amine 4D

Daconate 6

Profiles in LANDSCAPE MANAGEMENT

INDUSTRIAL PARKS LURE TENANTS WITH ATTRACTIVE LANDSCAPES

By GEORGE L. ZEIS

Streiler adds *dazzle to his properties to give tenants that special sense of pride.*

Prior to the 1950's, most of the industrial and business establishments in St. Louis County were inner city. Anyone buying land 20 miles west of St. Louis for an industrial development was considered foolish.

Today, the area alongside Interstate 270, west of St. Louis, is almost completely filled with thriving industrial parks and downtown St. Louis is forced to try harder to keep businesses from moving out.

"The value of commercial and industrial park acreage in St. Louis County, and those under construction, runs into the hundreds of millions of dollars," says Roger Grow of the St. Louis County Planning Department. According to Grow there are more than 70 industrial complexes in the County, with acreages ranging from two-and-a-half to 1,000. "An average park is 20 to 30 acres."

It wasn't until "campus" developments began in the outlying areas that business executives saw the need to improve the appearance of their business establishments. There was more space. The new buildings were attractively designed and required proper landscaping. Perhaps most important, industrial parks were competing with each other for tenants and attractive landscaping was a powerful lure.

Sylvester Streiler supervises more than $30 million worth of commercial property in St. Louis

Continued on page 38

4 reasons to advertise in WEEDS TREES & TURF's Turf Show Package

January Show Preview Issue OR February Show Issue
PLUS "International Turfgrass Show Dailies"

1 COMPLETE COVERAGE

Reach everyone interested in your product with **WTT's** GCSAA Show Package for the 54th GCSAA Show in Atlanta, February 22–24, 1983...

- More than 45,000 vegetation maintenance professionals will see **WTT's January Show Preview** and **February Show Issues before the Show,** when they're making plans
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- 10,000 **"International Turfgrass Show Dailies"** will be delivered to hotel doors and on the floor Tuesday and Wednesday, **at the point of sale**

2 HIGH VISIBILITY

WTT's January Show Preview Issue will be read for

- Agenda-planning information
- **Landscape Contractor/Lawn Care Profile**...for comparing, expanding

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- Product and personnel facts, final schedule... **before** the Show
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WTT's "International Turfgrass Show Dailies" will be read for

- On-the-spot news in Atlanta
- Booth numbers, floor plan, schedule
- Sweepstakes booth listings...for entering to win $1750 in prizes

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There's little time and a lot of ground to cover. **WTT's** Show Package will cover you.

- **WTT's Show Issues** will get you seen **before** and **at** the Show
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4 SPECIAL RATES

Advertising for the Show is a **must**—our special reduced rates make it more so! For instance, **save $910** on a tabloid page in the "Dailies" when you advertise in either January or February **WTT**...and still get 4 times the visibility!

Before you shout "Fore!" look where you're going. If you're going to the Show, bring your profits in **above** par by advertising in our GCSAA Show Package. **Call collect today!** Dick Gore, Jim Brooks or Ron Kempner at (404) 233-1817, or Bob Mierow at (206) 363-2864. AD RESERVATIONS CLOSE NOVEMBER 24 FOR JANUARY, DECEMBER 22 FOR FEBRUARY, FEBRUARY 1 FOR "SHOW DAILIES."

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County for Windsor Management Corporation. His title is vice president - property management. The corporation manages a total of five industrial parks, office buildings, and shopping centers.

"Landscape maintenance and beautification are of primary importance to our company," claims Streiler. "With the valuable property we manage, it behooves us to keep it attractive and appealing to our renters."

Streiler's $60,000 landscape budget is a sensible investment for the $3 million of rental income generated by the properties. "Our operating expenses amounted in 1981 to approximately 50 percent of gross income," Streiler figured. "We have special projects each year as our budget grows roughly ten percent annually. Each complex is charged separately for landscape work."

Budget planning for 1983 takes about three months with plans fairly well finalized by the end of September.

Four full-time employees are on the payroll. Most of their work during the summer months is landscape maintenance. Fall, winter and early spring activities involve snow removal, repair work both inside and out and other work activities as they arise.

There are more than 70 industrial complexes in St. Louis County.

Six extra workers are employed during the summer months. Their pay is based somewhat on previous experience, how much time they had worked previously for the Windsor organization and their alertness to daily responsibilities. The pay rate is about $4.25 per hour.

Streiler has two full time landscape employees reporting directly to him. But he also makes periodic visits with his part-time workers. And the employees are fully aware that the "boss" may appear at any time. While it is well to "inspect what you expect", Streiler feels that it should be a two-way street. Men on the job may have a new approach to performing a certain task and they want to pass it on first hand. It gives the employee a sense of responsibility that they might not have otherwise. Periodic inspections also stop any sloppy or poorly handled work loads before they become habit-forming or have a negative effect upon tenants.

Thirty acre *campus in west St. Louis County.*

No large equipment is owned as it relates to landscape maintenance or landscape work by this company. "We use the services of an outside contractor to do heavier work or to mow large areas," Streiler pointed out. "This means we have no investment in trucks, large mowers or other large equipment.

"From our experience, we have found it more practical to have larger areas mowed by an outside contractor. However, our staff does all the trimming. It is this last five percent of the job that really shows, the well trimmed shrub or walk area that seems to attract attention. This we want to have direct control over."

Windsor buys at least six trim mowers at a time and they are available at a moment's notice. "We know mowers will break down, sometimes rather quickly," Streiler said. "If this should happen, all we have to do is pull a replacement out of storage and no time is lost. This is important to us, particularly when weather conditions change rapidly."

No herbicides are used. Occasionally Diazinon is used to control grub infestation.

A 12-12-12 fertilizer is applied two times a year. Hand spreaders are used for distribution. Fertilizer is purchased just prior to application to avoid storage. Approximately $1,200 is spent on fertilizer each year.

A combination of Bluegrass and ryegrass is used for spot seeding. Approximately $500 is spent on seed each year.

An underground irrigation system was installed at one of the building sites to overcome a problem created by sunlight reflected from glass windows. "Shortly after the building was completed and occupied," Streiler said, "we had an unusual problem. Grass wouldn't grow. We finally determined that the reflected sunlight was more than the grass could stand. Now, the sprinklers are turned on at night, whenever extra water is needed, and the problem has been solved."

It is evident that Streiler likes color. One building area is bright with color from plantings of tulips, marigolds and chrysanthemums. These flower plantings are usually along walk areas. Bright and varying colors are there during the entire summer and fall seasons. Approximately $1,000 is spent on the purchase of tulip bulbs annually. **WTT**

WT&T

VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: *Can you suggest some disease-free trees to be used in landscaping my property?*

A: The following list of relatively disease-free plants can be used as a general guideline. I suggest that you contact your local extension specialist for further information concering the adaptation of these plants in your geographic location. Also check availability at your local nurseries. (Ohio)

Common Name	*Scientific Name*
Common Genera	
Amur Corktree	*Phellodendron amurense*
Beech	*Fagus grandiflora* and *F. sylvatica*
Corktree	*Phellodendron* sp.
Cucumbertree	*Magnolia acuminata*
Dogwood	*Cornus officianalis* and *C. mas*
Ginkgo	*Ginkgo biloba*
Honeylocust, Thornless	*Gleditsia triacanthos inermis* sp.
Hophornbeam	*Ostrya virginiana*
Hornbeam	*Carpinus caroliniana*
Magnolia	*Magnolia* sp.
Sassafras	*Sassafras albidum*
Sorreltree or Sourwood	*Oxydendrum arboreum*
Sweetgum	*Liquidambar styraciflua*
Tupelo	*Nyssa sylvatica*
Unusual Genera	
American Smoketree	*Cotinus americanus*
Dovetree	*Davidia involucrata*
Eucommia	*Eucommia ulmoides*
Franklinia	*Franklinia alatamaha*
Goldenchain	*Koelreuteria paniculata*
Goldenrain	*Laburnum anagyroides*
Kalopanax	*Kalopanax pictus*
Katsuratree	*Cercidiphyllum japonicum*
Kentucky Coffeetree	*Gymnocladus dioicus*
Laburnum	*Laburnum* sp.
Parrotia	*Parrotia persica*
Russianolive	*Elaeagnus angustifolia*
Smoketree, American	*Cotinus americanus*
Sophora	*Sophora japonica*
Stewartia	*Stewartia* sp.
Snowbell	*Styrax* sp.
Viburnum	*Viburnum* sp.
Yellowwood	*Celastrus lutea*
Evergreens	
Atlas Cedar	*Cedrus atlantica*
Baldcypress	*Taxodium distichum*
Cedar of Lebanon	*Cedrus libani*
Golden Larch	*seudolarix amabilis*
Larch	*Larix decidua* and *L. eurolepsis*
Juniper	*Juniper* sp.
Umbrella Pine	*Sciadopitys verticillata*
Yews	*Taxus* sp.
Hedge	
Bayberry	*Myrica* sp.
Glossy Privet	*Ligustrum lucidum*
Buckthorn	*Rhamnus davurica* and *R. frangula*

Q: *In recent years we have had greenbug aphid problems in lawns. I would appreciate receiving your comments concerning their biology and control. (Ohio)*

A: The greenbug aphid, *Schizaphis graminum* (Rondani), is a small, green soft-bodied plant louse which sucks juices from grass leaves.

Turfgrass is damaged in several ways by the greenbug which feeds on phloem sap with its piercing-sucking mouth parts, seriously weakening the plant. A secretion of salivary phytotoxin is injected into the plant, resulting in yellow and orange spots on the foliage. It is thought the toxin moves within the plant and weakens the root system. Infested areas are somewhat circular, with grass turning yellow and dying, often in shaded areas of large trees, although the problem is also found in open, sunny areas. Turfgrass may be damaged so severely that replacement is necessary.

The greenbug female - they do not need to mate - lays eggs in September and, after hatching, the insect population can build up very quickly to as many as 5000 per square foot. The insect can be either winged or wingless. The winged form allows the aphid to migrate to other lawns.

Dursban, diazinon or malathion are usually effective, but resistance to Dursban has been demonstrated. Another organophosphate, Orthene, has a special need label in Ohio, Kansas and Indiana. Because of the demonstrated ability to develop resistance to organophosphate insecticides, greenbugs are best controlled by alternating with a carbamate insecticide.

Q: *I have problems with sandburs in turf and ornamental plantings. I have used Balan and Dacthal with poor results. Timing has been prior to crabgrass germination. Suppliers continue to say that either should work. Can you help? (Minnesota)*

A: Balan is not recommended for sandbur control, and only moderate control can be obtained with a very high rate of Dacthal, which explains the reasons for the poor results you experienced. Sandbur in turf can be controlled best by the use of postemergent herbicides such as AMA, DSMA or MSMA. Apply when weeds are small and actively growing. For best results the herbicides should cover the foliage adequately. Repeat applications may be necessary if regrowth occurs.

Depending upon the ornamentals involved, sandbur can be controlled with glyphosate (Roundup) sprayed onto the foliage or by direct application with a rope wick.

Send your questions or comments to: Vegetation Management c/o WEED TREES & TURF, 757 Third Avenue, New York, NY 10017. Leave at least two months for Roger Funk's response in this column.

TAYLOR DUNN PULLS OUT REMAINS HIGHLY

Golf car sales in 1982 were a) great, b) flat, c) down, or d) all of the above? The most prudent choice would probably be "all of the above." A survey of the major golf car manufacturers by *Weeds Trees & Turf* showed once again that the fluctuating economy was the only common denominator factor affecting sales.

E-Z Go/Textron had a record year in 1982 and is predicting a record year for 1983. E-Z Go's Ron Patterson noted that golf cars are a good capital investment because they generate income. He added E-Z Go has the largest domestic network and spends the most money on research and development, two big factors contributing to the company's success. "We participate in the distribution so buyers know we are behind the vehicle they buy," said Patterson. Some other manufacturers noted that E-Z Go's expansion during the generally soft sales period of the last two years has made it even more difficult for them to compete. Patterson sees the economy starting to turn around with the recent downturn in interest rates and this is refected in a more optimistic attitude in his customers.

The fluctuation in interest rates was the main topic on the minds of most manufacturers contacted by *WTT*. While some viewed the recent drop in rates as a foreshadowing of a better economic climate, others were not as confident and took a wait-and-see attitude. All agreed, however, that there was at least a three month lag before a change in interest rates affected sales.

The spare parts business at Melex, USA has increased tremendously and that signals Clem Sherrick that people are holding off new purchases and fixing up their old fleet. "Business has been soft since interest rates hit 20%," said Sherrick. "I'm optimistic that period is being phased out and a more fruitful economic period is being

1983 Turf Vehicle Guide

	Model	Engine	Payload	Price	Options
Bajaj America, Inc. 1237 Gadsen St. Columbia, SC 29201	Gopher	10 h.p. gasoline	700 lbs.	$2695	
	TriStar Autoriksha			$2895 $3395	
Cushman/OMC Lincoln P.O. Box 82409 Lincoln, NE 68501	530 (3-wheel)	gasoline, 18 h.p.	1,500		dump box, flatbed, aerator, topdresser, sprayer, seeder, drag mat
	535 (4-wheel)	gasoline, 18 h.p.	1,500		same as 530
	531	18 h.p. gasoline	1,500		cab, doors, drag mat, power converter, stake pocket set
	533	gasoline	1,000		cab, doors, tool box, stake pocket set, tow hitch
	549	gasoline	250		spark arrestor, hour meter set, steering wheel set
E-Z-Go/Textron P.O. Box 388 Augusta, GA 30913 (404) 798-4311	GX-800	244 cc gasoline	800		
	GT-7	gasoline	1,500		
Hahn Inc. 1625 N. Garvin Evansville, IN 47711	Tournament	gasoline		$6,600	greens reels, tee reels, verti-cutter, vibra-spiker grass catcher
	Spray-Pro	gasoline		$5,750	sprayer, aerifier, utility truck bed
Jacobsen/Textron Racine, WI (414) 637-6711	UV-4	gasoline	1,500		
Smithco Inc. 11 West Ave. Wayne, PA 19087	Red Rider	gasoline	1,000		larger cargo carrier
Taylor-Dunn 2114 W. Ball Rd. Anaheim, CA 92804	1248B	electric	3,800	$4,065	cab, stake, sides, loading ramp

AS GOLF CAR MARKET COMPETITIVE

by THOMAS PACIELLO

1983 Golf Car Guide

	Model	Engine	Payload	Price	Options
Columbia Car Corp. 3110 International Ln. Madison, WI 53704 (608) 249-6300	D-3	250 cc gas	750 lbs.		suntop, windshield steering wheel, cradle bag rack
	DX-4	250 cc gas	750 lbs.		same as D-3
	DE-3	electric	750 lbs.		same as D-3 and heavy duty batteries
	DEX-4	electric	750 lbs.		same as DE-3
Club Car, Inc. P.O. Box 4658 Augusta, GA 30907	DS	electric	750 lbs.	$3,162	full line
	DS Villager	electric	1,000 lbs.	$3,573	full line
	DS Carryall	electric	1,000 lbs.	$3,575	full line
Elmco Cooksville, IL (309) 725-3533	11E	electric	850 lbs.		
E-Z-Go Textron Augusta, GA (404) 798-4311	X440	electric	500 lbs.		
	X444	electric	500 lbs.		
	GX440	gasoline	500 lbs.		
	GX444	gasoline	500 lbs.		
	444SE	electric	500 lbs.		
Melex USA	Turtle 112	electric		$2,995	tow bar, sun top, windshield
	Turtle 212	electric		$3,110	same as 112
Legend Eagle Vehicles 8181 Hoyle Ave. Dallas, TX 75227	EV3-01	electric	750 lbs.		
	EV4-01	electric	750 lbs.		
Yamaha Motor Corp. 6555 Katella Ave. Cypress, CA 90630	GI-A3	gasoline		$3240	sun top, hup caps, sweater basket
	GI-E3	electric		$2520	same as A3

phased in." At Melex the emphasis is on improving their cars' durability and ease of maintainence. The 1983 models will have few cosmetic changes.

At Bajaj America the favorite expression is "what recession?". Bajaj produces a low-priced, high-mileage turf vehicle, the Bajaj Gopher, that has been very successful since its introduction in mid-1982. "Our car has done real well and we expect an excellent year in 1983," said Bajaj's Dave Jones. Jones was one of the manufacturers who believed that it is premature to predict an upturn in the economy at this point. "Some businesses are expecting too much from the recent drop in rates," he added.

Steve Cullen at Elmco reported that his business was down about 10% in 1982, largely due to the slowdown in resort development. Elmco does not produce your standard golf car. The 11E is priced at $4995 and L21E runs for $5960. Both cars can be equipped with almost every imaginable option (and some that are not imaginable). Elmco's market is the exclusive resort complexes and the high cost of money severely curtailed construction in many Sunbelt areas, particularly Southern California and Florida. Culen predicts Elmco sales should recover about 5% in 1983 but competition in the golf car market will continue to be fierce. "I think that golf car production on the whole will probably be down and that will make the battle for sales even more competitive, especially among the Big Four (Yamaha, E-Z Go, Columbia, and Club Car)," said Cullen.

One of the companies that has decided to back out of that fray is Taylor-Dunn. Taylor-Dunn will not manufacture any more golf cars after 1982. "Industrial vehicles were always our bread and butter so we decided to concentrate our resources on those and halt pro-

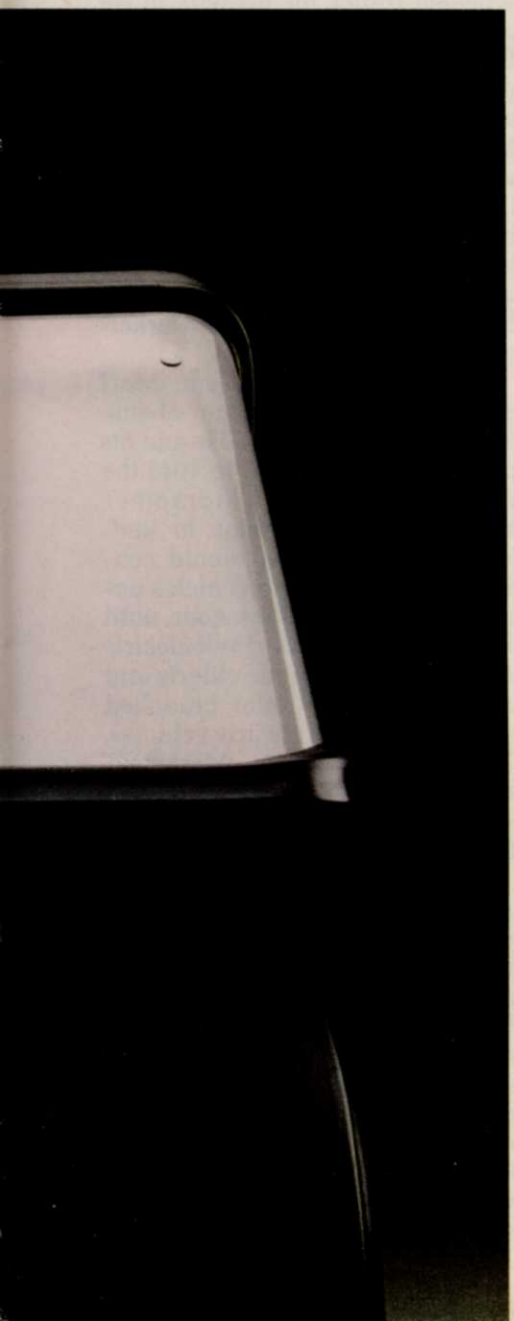
Continued on page 53

E-Z-GO. MADE OF STEEL. AND THAT DOESN'T SCRATCH THE SURFACE.

No one is exactly sure when the first piece of steel was refined. But since it happened, the world has never been the same.

Steel. Good enough for the auto industry. Good enough for E-Z-Go.

The design engineers at E-Z-GO sought to build a golf car that would last. So, they chose a metal that would last. They chose the same metal that is molded in the same precision as a $45,000 car. Or durable enough for a $17.5 million XM-1 tank. Steel.



Fiberglass is cheaper to fabricate than steel.

Try bumping into something in a fiberglass car, and you'll know why they call it fiber *glass*. It cracks and shatters. It also fades in the sun. E-Z-GO steel cars won't crack, shatter or fade.

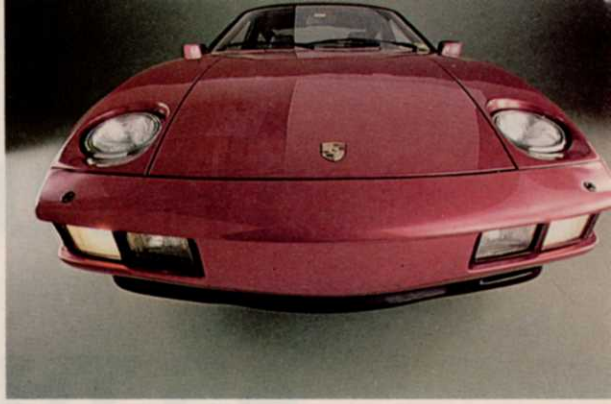
We could make a cheaper car. But we would have to use cheaper materials. And you would get a cheaper product. Almost half the golf cars in use today are E-Z-GO, and they last because we build them with steel.

Rust-Resistant Galvanneal.

We use a remarkable product called Galvanneal—a process by Bethlehem Steel that binds a rust-resistant zinc oxide with steel. The same process used by fine automakers. So your E-Z-GO won't rust out.

Repair the part that needs repair, not the whole body.

Steel is easy to build with. It shapes easily, and once it is shaped, keeps its form forever. Steel is easy to repair. In fact, it is cheaper to repair or replace steel than it is to repair or replace fiberglass. So steel really saves you money.



But the use of steel in E-Z-GO cars just exemplifies the depth of thought, research and dedication E-Z-GO puts inside each car.

When you're in an E-Z-GO, you're in an engineering masterpiece, designed to run for years with a minimum of maintenance.

Found on the world's finest golf courses.

You would expect to see a car as fine as E-Z-GO on the world's finest golf courses. Our car's design is carefully thought out. It's tested by seasoned experts, and ridden by golfers around the world. E-Z-GO is found at 70 of the world's top 100 country clubs in the United States. From the steel body, to the parts constructed in our own factory, E-Z-GO represents the state of the art in golf car engineering. No wonder you'll find the world's finest golf car, on the world finest golf courses.

E-Z-GO
TEXTRON

P.O. Box 388, Marvin-Griffin Road
Augusta, Georgia 30913-2699.

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Circle No. 111 on Reader Inquiry Card

THE UPS AND DOWNS OF GOLF CARS AS THE GAME GROWS

By National Golf Foundation, golf car division

The golf car today is not a just a matter of convenience. It also happens to be the biggest profit making item at most golf facilities throughout the country. How, why, and where this chain of events took place is a history lesson to the lasting effect of golf.

There are varying reports as to exactly when the first golf car drove onto the scene. Yet statistics show, during the 23 year period between 1931 and 1954, that the number of United States golf facilities declined from 5691 to 5076. Then in the 23 year period following, between 1955 and 1978, golf cars came into their own with golf facilities increasing in number from 5218 to 11,885. There is no question that the growth of golf holds a strong parallel to the largest period of growth for the golf car. With their availability and use, more and more golfers were able to play more rounds of golf!

Of course, first attempts at some type of golf cart or car came much before this surge of growth. Golfers since time began have thought of ways to make the course a little easier to cross. In the late twenties, oldsters at North Carolina's Biltmore Forest Country Club were using caddy-powered rickshaws to get in a round of golf. In England, there were cartoons depicting a type of "caddie car" with a boy pushing a trolly containing not only the golfer but a decanter of whiskey, a soda water siphon and two glasses—supposedly an example of the perfect way to face the course.

In 1930, a Curtis Willock was appointed Greens Committee Chairman at Annandale Golf Club in Pasadena, California. Willock had a wooden leg and was looking for ways to give more mobility to his game. Gaining permission from the club to venture into the possibilities associated with using a vehicle for golf, Willock enlisted the help of Ben Delanty, then Manager of the Pasadena Power Department. Mr. Delanty, through a body shop in Pasadena, had a three wheel vehicle with an auto steering wheel made. Each rear wheel was driven by a motor powered by 12-volt batteries. There were two speeds, one in reverse, and a rack on the front for clubs. To Willock, this vehicle made his game. To the game, this vehicle was just the beginning of a new era in golf.

Growth was slow. After Willock's attempt at the first golf car, the trend did not catch on until after the Second World War. Like Willock's the cars were built for golfers who had some sort of physical impairment and were not allowed on courses otherwise. Handicapped veterans in Palm Springs had specially built cars made for them in order to enjoy the game. In Kansas City, a Dr. R.A. Richardson took the basic design of a tricycle and invented a motorized cart in order to get in more rounds of golf despite a back ailment.

> Growth of golf parallels growth period for the golf cart

Meanwhile out in Long Beach, California, other men were experimenting with the invalid vehicle business too, never realizing where it might lead.

World War II brought on gas rationing, but Merl Williams, then a tooling inspector at Douglas Aircraft Company in Long Beach, found a way to deal with the problem. He conceived the idea of building a small two-wheeled electric motorcycle with a single-wheeled trailor for his wife to get around town and do her shopping. During her shopping tours, many people stopped her to ask where she got her vehicle. As a result, Merl went to work building these vehicles in his garage and selling them to Long Beach residents. As his business grew, Merl had to leave his garage and join another man who had a small scooter sales business nearby—thus the Marketeer Company was born.

When the War was over, Merl and his wife decided to move home to Redlands, California. He and his partner separated, and in 1945 the Williams' brought *Marketeer Manufacturing Company to Redlands* (Merl's partner would continue to build electric vehicles under the name of Marketour until the early 1970's). They built electric invalid tricycles for the elderly and handicapped, and later branched out into industrial electric vehicles. During these years, Marketeer built special vehicles at the request of customers who needed a special design for a particular purpose.

One of their more "interesting" requests came in 1952 when a man asked Marketeer to build him a vehicle to ride around a golf course in. After a good laugh and of course filling the customer's order, Marketeer had built their first golf car and went on to become one of the largest manufacturers of golf cars in the world during the 50's and 60's. These first cars were three-wheeled with tiller steering and

Continued on page 48

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hand controlled speed and brake. They sat two passengers and there was room for golf clubs behind the seat.

While Marketeer was involved in the invalid car business, the Autoette Company also in Long Beach, was busy producing and converting the invalid cars into viable vehicles for golf. Though many of their sales were primarily to people in need of a car for health reasons, Autoette became very involved in redesigning the invalid cars solely for golf and was one of the first companies to begin leasing small fleets.

Golf car revenues have helped hold down greens fees and dues to members

In March of 1948, the first golf car to receive an official patent was the "Arthritis Special." Mr. R.J. Jackson, a Texas oilman, produced the particular model, which was displayed at courses throughout the United States. Comments ranged from ridiculous to wonderful, stupid to essential.

This was the beginning of serious entrants into the world of golf car manufacturing, yet acceptance of the car was still a major obstacle. The PGA and other groups were not so quick to take this "innovation" seriously and it was years before the golf car was readily accepted.

From the late 40's through the mid 50's, improvements on golf cars were made by trial and error. Since the need was not prevalent, research and development did not have the means to be supported and for the first several years almost all electric vehicles were built with little or no variation.

In 1955, advanced steps were taken. Twelve or fifteen manufacturers were now involved in the process. Clubs were more willing to try a small fleet of cars, averaging 8-10 cars with many 2 and 4 car fleets, on their courses. The individual owner was no longer the only customer. Sales at this time ranged between 8,000 and 10,000 units annually. As the market began to grow, so did those interested in it. Bankers began to see a potential and offered leases to clubs and easy financing in order to try out this new movement.

Still, only one single golf car was manufactured under the PGA label during the first few years. This car was made by what was then known as the Victor Adding Machine Co. Popularity was growing, and with it manufacturing began to grow. It was a continuous in and out business. Some of the companies who came, went and stayed included Spartan Aircraft Co., Allis Chalmers, Sears Roebuck and Co., Westinghouse, AMF Par Pony, Wayne Golfmobile, Cushman, Caddy Car, Worthington Mardi Car, Turf Rider, Marketeer, Versal, Eshleman, Gross Givens, Westmont, Autoette, Atwood Terra Car, Westcoaster, Walker, Jato, Electric Caddy, and the list seems endless.

Even though companies came and went, the golf car maintained its climb to becoming a strong force in the game. More and more golf facilities were realizing what a strong profit maker the golf car could be for their club. Through the 1960's and 70's, sales continually and consistently increased.

In addition to the profit making factor, acceptance by the PGA also rested with the realization that the golf car was convenient—with proper utilization, they reduced playing time, thus more golfers could play. The golfer with limited time could now play a round of golf more quickly, and as was true in the beginning, people with health problems could more fully enjoy a round of golf. Adverse weather conditions could also be taken in stride when riding in a golf car. Every year, more and more people were learning to enjoy the game and the golf car helped bring this impact about, keeping golf within reach of players from all walks of life. In 1957, 3,812,000 people averaged 17 rounds each. In 1980, 13,000,000 averaged 28 rounds each.

While convenience was a key factor, the fact that golf cars were and still are one of the most profitable entities at a golf facility was even more important. Without the golf car, many a golf course would either have to raise greens fees and dues tremendously or close down, and the number of privately owned daily fee courses would drastically decrease, as investors need return on capital too. Through this added income, golf facilities can afford more PGA professionals for teaching, better managers, lower greens fees and dues, and the opening of the facilities to more people. This perhaps is the most important point in the acceptance of golf cars.

What does the future have in store? The car itself is experiencing strides in efficiency just as the automotive industry. Electric and gas cars are lighter, more maintenance free and cost less per round to operate. Rider comfort and safety have been greatly improved. Cars for individuals now have stereo radios, drink coolers, as well as upgraded upholstry and paint jobs like deluxe Detroit automobiles. On the drawing boards are such innovations as solar powered golf cars.

The first golf cars were designed for the handicapped

Today, over 660,000 gas and electric cars are in operation and in 1981 golf car income was approximately $1¼ billion.

When adding up the final score, the golf car has proven to be a winning factor in advancing the game of golf. Without it, that final drive would be a long one. **WTT**

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WITH A BUILT-IN LIFE PRESERVER.

Toro stops at nothing to give you the kind of riding rotary mower you want most.

A mower that keeps you cutting. Gets the job done.

The latest example: our new Diesel powered Groundsmaster 72®. It offers you maximum productivity and reduced operating costs as well as remarkably low levels of noise and vibration.

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We knew that water in fuel can literally drown a Diesel. Destroy its injectors and injection pump. And soak *you* with costly repairs and downtime.

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Plus, other advantages you get with every Groundsmaster 72®, gas or Diesel. Such as hydrostatic drive and a Donaldson air cleaner.

Call your Toro distributor. He'll tell you all about Toro riding rotary mowers. Including the newest: our Groundsmaster 72® with Diesel engine.

THE NEW TORO DIESEL
It's our Groundsmaster 72®
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THE PROFESSIONALS THAT KEEP YOU CUTTING.

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EVENTS

The current isssue of WEEDS TREES & TURF carries meeting dates beginning with the following month. To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 757 Third Ave., New York, NY 10017.

Professional Lawn Care Association of America 3rd Annual Convention and Trade Show, Indiana Convention Exposition Center, Indianapolis, **Nov. 16-18.** Contact Jane Stecker, 435 N. Michigan Ave., Suite 1717, Chicago, IL 60611. (312) 644-0828.

Professional Grounds Management Society National Conference, Vacation Village Hotel, San Diego, CA, **Nov. 14-18.** Contact Michael Silberhorn, 7 Church Lane, Pikesville, MD 21208. (301) 653-2742.

Eighth Annual **Professional Landscape Management School,** Indiana State University-Evansville, **Nov. 16-17.** Contact Allen Boger, Purdue Extension Agent, Room 202, City-County Bldg., Evansville, IN 47708.

Metropolitan Shade Tree Conference, Arlington Knights of Columbus Hall, Arlington, VA, **Nov. 18.** Contact Bruce Whiton, Virginia Cooperative Extension Service, 901 Wythe St., Alexandria, VA 22314. (703) 838-4333.

American Society of Landscape Architects Annual Meeting, Hilton Hawaiian Village, Honolulu, HI, **Nov. 20-23.** Contact ASLA, 1733 Connecticut Ave., NW, Washington, D.C. 20009. (202) 466-7730.

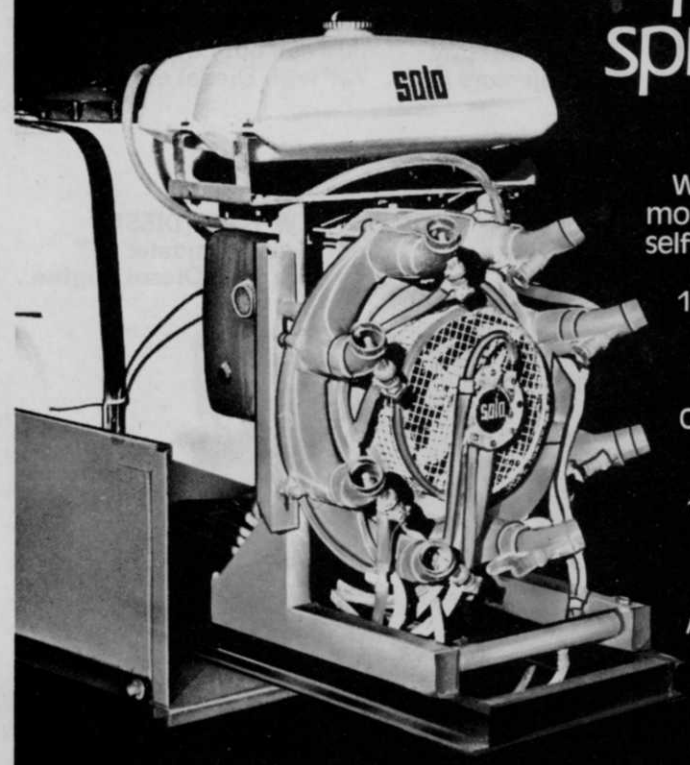
New Jersey Turfgrass Expo, Resorts International, Atlantic City, NJ, **Dec. 6-9.** Contact Dr. Henry Indyk, Soils and Crops Dept., Cook College, Rutgers University, PO Box 231, New Brunswick, NJ 08903. (201) 932-9453.

Ohio Turfgrass Foundation Conference and show, Hyatt Regency, Columbus, OH, **Dec. 7-9.** Contact John Street, OTF, 1927 Neil Ave., Columbus, OH 43210. (614) 422-2592.

Texas Turfgrass Association Conference and Show, Amfac Hotel, Dallas-Fort Worth Airport, **Dec. 6-8.** Contact Dr. Bill Knoop, TAMU Center, 17360 Coit Rd., Dallas, TX 75252.

Western Pennsylvania Turf and Grounds Maintenance School and Trade Show, Pittsburgh Marriott Hotel/Expo Mart, Monroeville, **Dec. 7-9.** Contact Christine King, 412 Blanchard St., Bellefonte, PA 16823. (814) 355-8010.

21st Annual North Carolina Turfgrass Conference, Pinehurst Hotel, Southern Pines, NC, **Jan. 4-6.** Contact L.T. Lucas, 3409 Gardner Hall, NCSU, Raleigh, NC 27650. (919) 737-2751.



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Maryland Turfgrass 1983., Baltimore Convention Center, **Jan. 10-12.** Contact Dr. Thomas Turner, 1112 H.J. Patterson Hall, University of Maryland, College Park, MD 20742. (301) 454-3716.

21st Nebraska Turfgrass Conference and Trade Show, Holiday Inn, Omaha, **Jan. 11-13.** Contact Robert Shearman, Turfgrass Specialist, 377 Plant Science Complex, University of Nebraska, Lincoln, NE 68583. (402) 472-2550.

Update on Tree Care for the Professional by Alex Shigo, US Forest Service Northeast Experiment Station, Durham, **Jan. 18-19.** Contact Ralph Burgio, UNH Div. of Continuing Education, Brook House, 24 Rosmary Ln., Durham, NH 03824. (603) 862-1089.

NAA Annual Meeting, Marriott Hotel, New Orleans, **Feb. 6-11.** Contact Robert Felix, National Arborist Association, 3537 Stratford Rd., Wantagh, NY 11793. (516) 221-3082.

Professional Turf and Landscape Conference, Tappan Zee Towne House, Nyack, NY, **Jan. 26.** Contact Eleanor Cunningham, Professional Turf and Landscape Conference, PO Box DD, Millwood, NY 10546.

ALCA Annual Convention, Miami Hyatt Regency, Miami, **Jan. 15-21.** Contact Associated Landscape Contractors of America, 1750 Old Meadow Rd., McLean, VA 22102. (703) 821-8611.

Central Environmental Nursery Trade Show, The Ohio Center and Hyatt Regency House, Columbus, OH, **Jan. 24-27.** Contact Bill Stalter, Ohio Nurserymen's Association, 6075 Cleveland Ave., Columbus, OH 43229. (614) 890-5688.

Landscape/Garden Center Management Clinic, Galt House, Louisville, KY, **Feb. 6-9.** Contact National Landscape Association, 230 Southern Building, Washington, D.C., 20005. (202) 737-4060.

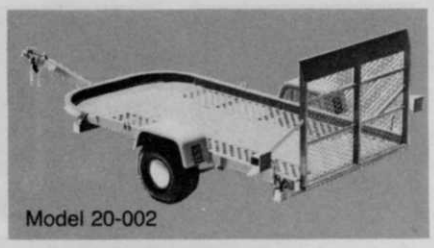
New Hampshire Turf Conference, Sheraton Wayfarer Motor Inn, Bedford, NH, **Jan. 13-14.** Contact John Roberts, Extension Specialist, Plant Science Dept., Nesmith Hall, University of New Hampshire, Durham, NH 03824. (603) 862-1200.

GCSAA International Turfgrass Show, Georgia World Congress Center, Atlanta, **Feb. 22-24.** Contact GCSAA, 1617 St. Andrews Drive, Lawrence, KS 66044. (913) 841-2240.

Pennsylvania Turfgrass Conference and Trade Show, Hershey Lodge, Hershey, **Feb. 28 - March 3.** Contact Christine King, PTC, 412 Blanchard St., Bellefonte, PA 16823. (814) 355-8010.

Annual Canadian Turfgrass Show, The Edmonton Inn, Edmonton, Alberta, **March 13-16.** Contact Canadian Golf Superintendents Association, 698 Weston Rd., Suite 32, Toronto, Ontario M6N 3R3. (416) 767-2550.

Snowco Utility Trailers
...now even more versatile!


Model 20-002

Ideal for hauling grounds maintenance equipment, golf cars and other bulky, hard-to-handle items, the proven Snowco line includes eight flatbed trailers with loading ramps or tilt decks, plus a box bed trailer with tailgate.

The design of the popular ramp loading trailers—with perforated steel decks—has been improved for increased versatility. Three models are offered with capacities of 1,150 to 4,200 pounds.

Five tilt trailers with perforated steel decks are offered with capacities of 1,000 to 3,500 pounds.

The steel box bed trailer—capacity 1,200 pounds, is available with an optional canvas or fiberglass cover.

Model 20-006

Please send Utility Trailer information.

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Organization_____

_____

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City_____ State_____ Zip_____

Snowco
Division of Beatrice Foods Co.
4386 McKinley, Omaha, Nebr. 68112

Circle No. 114 on Reader Inquiry Card

PRODUCTS

Sprayers come with piston or roller pumps

Century Engineering has lawn and garden sprayers in 25- and 50-gallon, self-contained models powered by 3

hp, 4-cycle engines. Standard 25 ft. handgun hoses provide a vertical reach of 27 ft. The spray boom has an 80 in. coverage and spray tips are 2-#C-3 nylon flood.

Circle No. 125 on Reader Inquiry Card

Male valves save fittings

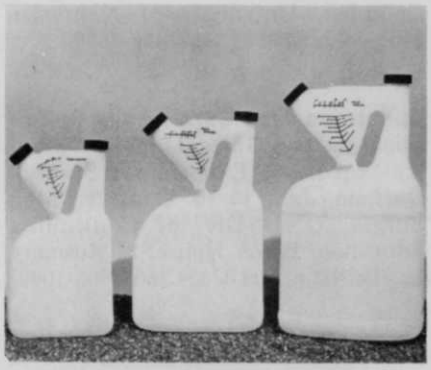
Toro Co.'s Irrigation division is offering a series of one-inch male valves designed to save the installer time and money. Four models are in the series and are available with threaded or

barbed inserts and with or without flow control. Molded of DuPont 77 Super-tuff, all models feature globe valve for easy installation and provide manual bleed with bleed ports protected by built-in filters.

Circle No. 126 on Reader Inquiry Card

Eliminates secondary measuring devices

Container Mfg. Inc. introduces a one gallon measure dispensing container with an integrally molded calibrated head that eliminates secondary measuring. Units have standard closure dimensions, are adaptable to C/R



closures, feature a larger eight oz. measuring head and have a recessed body for adaptation to sleeve labels.

Circle No. 127 on Reader Inquiry Card

TURFCO Sod Master

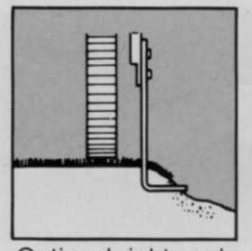
EDGE-R-RITE MODEL N

New!

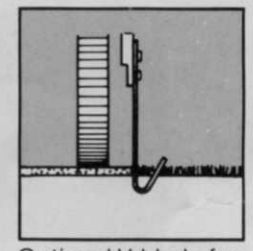
Oscillating Disc Blade Turf Edger

The all-new, all-purpose, self-propelled turf edger

No spinning blade to throw debris! Oscillating arm reverses disc blade direction over 1000 times per minute, cutting on both forward and backward strokes. Tough, durable construction. 3HP B&S engine with 6:1 gear reduction.



Optional right angle blade for flower beds and golf course sand traps.



Optional V-blade for removing sod strips if trenching along sidewalk is desired.

The safer, faster method with Turfco's exclusive cutting action that cleanly slices turf edges and takes the hard work out of edging!

TURFCO Sod Master

TURFCO MFG., INC. DEPT. 3211, 3456 N. Washington Ave., Minneapolis, MN 55412 612/588-0741

Circle No. 119 on Reader Inquiry Card

PRODUCTS *from page 52*

Attaches to single pin hitch

Vemco Corp. has introduced a gasoline-powered tow-behind flail mower that can operate as a single unit or in a gang formation. The TB48 cuts swaths

from 48 in. with one unit to 19 ft. with gang of five in heights from ¼ in. to 4¼ in. in ½ in. increments. Engine choices include 7, 8, 10 and 11 hp ones, and dethatching blades are also available.

Circle No. 128 on Reader Inquiry Card

TAYLOR DUNN *from page 43*

duction of golf cars after '82," said Bob Dunn. "For Taylor-Dunn there is simply more money in the industrial vehicle market. That is where our expertise comes from." Dunn echoed other manufacturers' remarks that the Big Four are raising the stakes in the battle for increased market share. "Let them fight it out," he added.

In predicting the future market mix between electric and gas golf cars manufacturers were uncertain which will come out on top but noted that new technology is improving both types. E-Z Go's Patterson noted that the shift to gas cars a while back was basically due to the skyrocketing commodity price of lead. Battery prices are almost directly related to the price of lead and the increase made electric cars almost cost prohibitive. The price of lead has now dropped, which may give electric cars another surge of sales energy.

The outlook for the golf car market in 1983 is predictably mixed but a few constants remain. Many fleets are being held together glue, wire and hope and will soon have to be replaced. The recent drop in interest rates will most likely show up in 1983 sales. And, The days of sitting back and watching the orders roll in are long gone. The competition will be keen and, as in Darwin's world, only the fittest will survive. **WTT**

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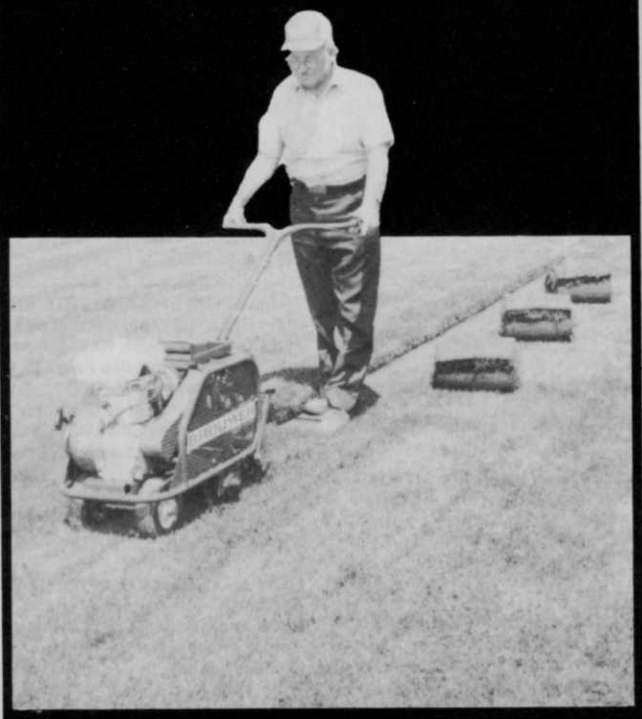

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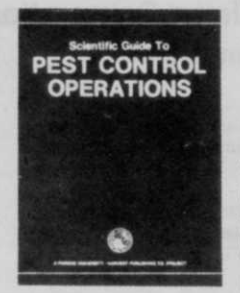

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Reader Service Number		Page No.
101	The Andersons	47
102	Brouwer Turf Equipment LTD	53
103	Bunton Co.	12,13
104	Ciba-Giegy	33
105	Columbia Car Corp.	5
106	John Deere	3
107	Diamond Shamrock/Ag Chem	34,35
108	Ditch Witch Equipment	20,21
109	Dow Chemical U.S.A.	CV 2 & pg 1
110	Excel Industries, Inc.	27
111	Polaris E-Z-Go	44,45
122	Lofts Seed Co. (North)	CV 4
123	Lofts Seed Co. (South)	CV 4
124	Monsanto	6,7
112	Mobay Chemical Corp.	28,29
113	Ransomes, Inc.	11
114	Snowco	51
115	Solo Incorporated	50
116	The Toro Company	49
117	Toro Irrigation Division	CV 3
118	Toro Irrigation Division	15
119	Turfco Mfg., Inc.	52
120	Vermeer Mfg., Co.	24
121	Woods, Div. of Hesston Corp.	9

NEW PRODUCTS

Reader Service Number		Page No.
125	Century Engineering	52
126	Toro Irrigation Division	52
127	Container Mfg. Inc.	52
128	Vemco Corp.	53

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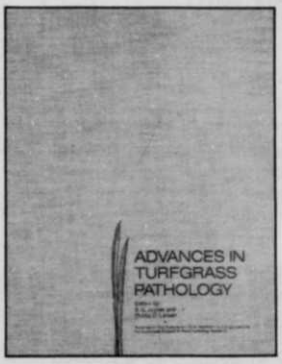

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